

FOOD AND CLOTHING

LENO OSBORNE

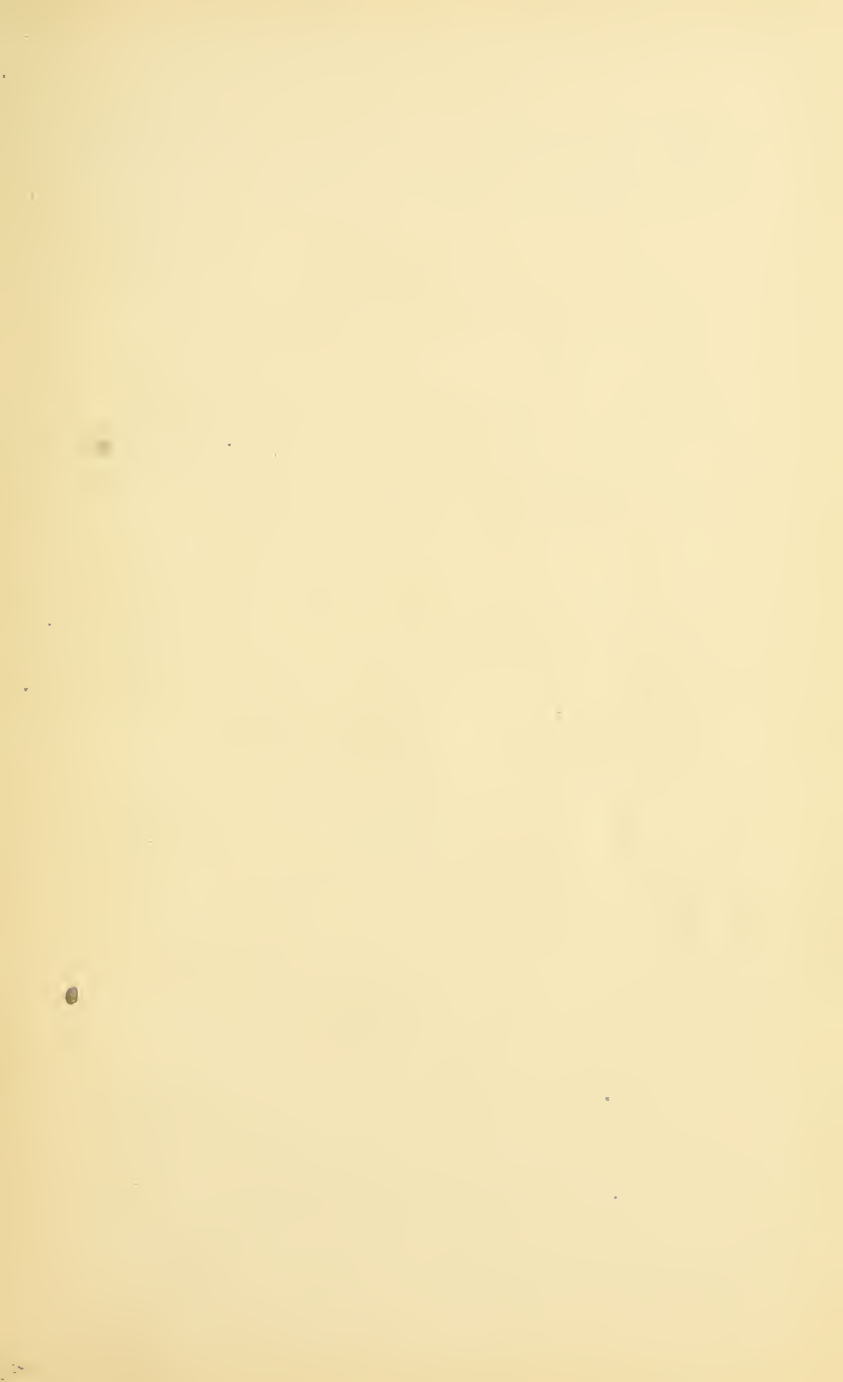


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FOOD AND CLOTHING

BY

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PREFACE

The course contains material for the first one hundred and forty lessons to be taught in foods, cookery, diet, textiles, and clothing. The number of lessons given per week and the length of time taken for each recitation will determine the number of school years it will require to complete the course.

In schools without laboratories, if three Theory lessons are given per week, with three Practice lessons of home-work required, the course may be finished in two years.

It makes very little difference whether the teaching of this subject is first introduced in the fifth or a later grade. The beginning lessons should be the same; that is, those presenting:

The classification of the different foods.

The building materials they contain.

The effect heat and moisture will have upon them.

The planning, cooking, and serving of meals with regard to "balanced rations."

The composition and manufacture of different cloths.

The making of plain and useful garments.

The appropriateness of material and style to occasion.

The present day Physiology treats the subjects of sanitation and digestion so completely that it is not necessary to repeat but to correlate with them. In the Agriculture we find the growth, cultivation, and care of most of our food stuffs, simply and clearly explained; the Geography takes up the adaptation to climate, and the commercial side of these subjects. Teachers by this correlation may

save the time of at least two recitations per day—a valuable feature in a crowded program.

Language Lessons, or Composition work, might often be selected from these subjects with gratifying results.

The subject matter has been arranged in chapters for a matter of convenience, but it is not the intention that they be taught in the order given unless the season of the year so dictates. For example the chapter on vegetables should be divided and the fresh vegetable lessons be presented in the spring and the dry vegetables in the winter; the sugar lessons at Christmas time; the meat lessons and dry fruits and vegetables in the winter.

In the “Suggestions to Teachers” it is the aim to discuss very plainly the *how* of presenting these subjects.

The aim of this course is to give the student the principles of the selection and preparation of food; a study of proteins, fats, and carbohydrates, with the effect of heat upon them; a study of meats and vegetables with a comparison of animal and vegetable foods and ways of preparing and combining them; the cost of the different foods in comparison with the building material each contains; laboratory work which teaches how to perform the various duties of the home with the greatest efficiency and the least expenditure of effort.

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LENO OSBORNE.

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SUGGESTIONS TO TEACHERS

If it were possible for all teachers who must teach Domestic Science to have training in the theory and practice of the subject, the following suggestions would hardly be necessary. But observation has taught us that a carefully planned text, with general directions for class management, in the hands of resourceful and energetic teachers, can bring about results far superior to those of the trained teacher who lacks initiative.

It makes little difference how well or how poorly equipped the instructor is for presenting this subject, the most essential qualifications in her are *resourcefulness, system, good judgment and personal cleanliness*.

No woman can arouse in girls the proper interest in this subject unless she is interested in it herself. The teacher who makes the assertion that she does not enjoy any phase of housekeeping or of the preparing of meals, should not be allowed to teach Domestic Science. Her pupils may be able to pass an examination, but they will never be able to make the house *a home*, and she must be able to lead girls to feel that they cannot do a better thing than to give their time and energy to the care and maintenance of this home.

Personal cleanliness of the teacher has a great influence upon the girls. No woman can inspire the proper interest in this subject, if she appears before her class in a soiled dress or apron, or with unclean hands and nails. Large white aprons over woolen dresses may be tolerated where the work occupies only a minor portion of the day, but the careful teacher will wear a wash-dress, preferably white. The woolen dress collects odors and dust, often full of bacteria, and in the kitchen these may be the cause of harmful results. The teeth should be clean and the breath free from bad odors.

THE EQUIPMENT

The object of equipment in this work is three-fold: to prepare food for cooking, to furnish the vessels which contain the food while it is being cooked, and to supply heat. Elaborate equipment has very little to do with good results.

One teacher succeeded with this purchased equipment for each of her pupils: one 12 inch pan, one 6 inch pan, one pie tin, one knife, one fork, one tablespoon, one tin cup; all costing 40c. The large pan served as a dishpan, as a vegetable pan, and, by placing the smaller one in it and using the pie tin for a lid, as a double boiler. The fork was used in place of an egg beater. A baking powder can was used as a biscuit cutter and a pop

bottle for a rolling pin and a masher. A piece of window screening was cleaned with gasoline, shaped over an inverted pan and used as a sifter. These, besides a stove, and tables and cupboards made of boxes, furnished the equipment for a school kitchen. The results were so gratifying that the patrons were anxious to have money spent towards the furnishing of a modern laboratory.

A teacher in a rural district borrowed a tent from one family, an old stove from another and whatever could be loaned from the various homes in the way of dishes and cooking utensils. These she kept in a locked box which was carried out to the tent-kitchen every morning and each day four pupils prepared, under her direction some one thing for the lunches of the other pupils.

When a laboratory is to be fully equipped and the teacher is inexperienced, it is wise to consult the director of a larger or an older school as conditions vary so greatly that it is not wise to give specific directions which are to be used generally.

CLASS MANAGEMENT WHERE THERE IS NO EQUIPMENT

In rural schools where all practical work must be done at home, the teacher should, as each new subject is presented, lead the pupils to become interested in its production (from agriculture); its adaptation to climate and its commercial value

(from geography); its food classification (domestic science); the effect of the digestive fluids upon it (physiology); the effect of heat upon it (moist or dry), and the various ways it may be prepared by itself or in combination to make it palatable and digestible (domestic science).

The number of lessons for this will depend upon the time given at each recitation. The recipes in the Domestic Science text are for small amounts, individual proportions unless otherwise stated.

Help the students to figure the amount they must prepare for the number of people at home. Use the time of several lessons for reports as to the results of the home-work, and if any failures are reported, help them to find from their text the *cause* and the means of *prevention*. Lead them by questions from their Physiology and Domestic Science texts to make food selections suitable for body building, and emphasize continually the dangers of allowing appetite to govern food consumption.

If possible study and prepare the quick-growing perishable vegetables and fruits in the spring and fall seasons, leaving the dry vegetables, grains, fruits and meats for the winter months.

CLASS MANAGEMENT

The order in the room depends upon conditions. Usually there is no occasion for conversation

among pupils, especially if the equipment is individual. Working in groups is by no means a satisfactory method and does not bring about the best results. Pupils depend upon each other instead of developing independent judgment and self-reliance.

HOUSEKEEPERS

There is so much general work to do in a laboratory that it is necessary to have some extra help after each lesson. The girls who are appointed to do this work are called "housekeepers." This is the only general housekeeping work that most school kitchens offer and it should be under close supervision. The duty of each housekeeper and the number needed will depend upon the equipment. These duties should last only during one lesson, and care should be exercised that the appointments come in regular rotation with a change of duties. The following suggestions may be helpful:

Housekeeper No. 1—Put away supplies. Clean the supply table. Clean the ice box and keep in order.

Housekeeper No. 2—Wipe out all the drawers and shelves in the laboratory not in special charge of any one else. Clean the fancets, strainers and soap dishes.

Housekeeper No. 3—Clean the sinks and all stoves not used during the lesson.

Housekeeper No. 4—Inspect cupboards and drawers and report missing utensils. Inspect towels, tea-kettles,

etc., and report any disorderly condition in the laboratory.

THE LESSON

It is practically impossible to conduct a Domestic Science lesson in the *laboratory* in less than *ninety* minutes, even though the theory or chemistry part is given at a separate period. A few directions must be given, the lesson prepared, criticisms offered, and failures, if any, explained, with means of prevention reasoned out. Dishes and utensils must be washed and towels scalded and placed to dry.

Each girl's part in the cleaning of the laboratory after a lesson is one of the most valuable of the hour. A pupil who is not corrected for leaving her dishes improperly scalded and dried, her stove not clean, or her equipment out of place, has lost an essential part of every laboratory lesson,—those of order and neatness and cleanliness.

It is best for the teacher to have all supplies out and ready for use when the pupils come to the room. This is considered one of the very important parts of lesson preparation.

FIRST YEAR

CHAPTER I

HOME ECONOMICS

Home economics. This term is applied to the scientific study of all matters pertaining to the healthy, efficient, enjoyable home life. Within its scope is included the study of chemistry, bacteriology, plant life; the home, its location, arrangement, furnishings and ventilation; household management, which includes not only the study of how to perform the various duties of the home with the greatest efficiency and least expenditure of effort, but how to maintain the mental and physical health of those in the home; physiology of digestion; sanitation; care of the sick; cookery of food; textiles and clothing.

So great is the importance of this subject to the home, and to the welfare of those in the home, that colleges have extended the completion of the course over four years of time. We, with less than one hundred recitations, can give the subject under only two heads:

Domestic science, which includes the study of food, its source, nutrition, cost and cookery; the

physiology of digestion; the scientific planning and serving of meals with reference to "balanced rations," or the amount of food necessary, under specified conditions, to supply the body with building material.

Domestic art, the scientific study of clothing from the standpoint of health and comfort; textiles, with reference to their various sources, weaves, and colors; garment making, including the appropriateness of the style to the wearer and the occasion.

INSTRUCTIONS TO PUPILS

IN THE LABORATORY

Each girl should have:

A clean apron, preferably white.

A small hand towel fastened to the belt.

A nail file.

A small bag or purse to hold rings, bracelets, etc.

Girls should wear, if possible, clean wash dresses. The dangers of the woolen dress in the kitchen may be very great. A girl often wears the same dress for weeks; and, since the pupils come from many different homes, having varied conditions, possibly diseases, the woolen dress is likely to be a germ carrier.

Place great stress upon clean hands and nails.

The hands should be washed, the nails cleaned, then the hands washed again before beginning to prepare a food.

THINGS TO REMEMBER WHEN COOKING

1. Read the recipe carefully before beginning to prepare the dish. Determine the fewest possible utensils with which you can prepare this food and do not use more. Avoid the very bad habit of so many housekeepers, that of soiling every dish in the kitchen when preparing a meal.

2. Keep all dishes and other utensils washed and in the smallest possible space.

3. Plan your work so as to save steps. "Conservation of strength" should be the watchword of every housekeeper.

4. Do not use your apron for a towel, a lifter, or in place of a handkerchief. Many women who consider themselves neat, wipe their hands and face on their apron and then use it for removing dishes from the oven, handling pans, etc.

5. Keep your hands absolutely clean during the lesson. Wash them after you have used the handkerchief or had them on your face or hair.

6. When tasting a food to determine its seasoning, place a portion in a spoon with the mixing spoon. Do not place a spoon that has been in the mouth in food. Many years ago, before people

knew the dangers of infection from the breath, women would blow their breath on portions of food to cool it for the children, or would blow back the cream from a vessel containing milk when they wanted only the milk. Read the chapter in your physiology, "The Air Passages and the Lungs," and reason from that, why any of these careless habits are very dangerous to the health of those about us.

7. Do not eat particles of food while cooking. A housekeeper who minces over her food as she cooks it does not take the proper interest in its preparation or service.

TO WASH DISHES

1. Scrape all food particles from the dishes.
2. Rinse the dishes before placing them in the dish water.

3. Dishes or vessels which have had egg or flour mixtures in them should be rinsed in cold water.

4. Dishes or vessels which have had greasy foods or syrup in them should be rinsed in boiling water.

5. Pack like dishes and cooking vessels together.

6. Wash in this order: glass, silver, china, tin, crockery, iron. Place in another pan, scald each division and dry before washing the next. When

placing them in the draining pan to be scalded, place each dish inside up. Why?

7. Have two dish cloths, one for dishes and one for cutlery. Scald the cloths before hanging away to dry.

Drying towels should be scalded after each using, or hung in the sun to sterilize. Too much importance can not be given to having clean, pure, sanitary dish cloths and towels.

FOOD

A food is any substance which, when taken into the body, builds tissue, and produces heat and energy without directly or indirectly injuring the cells.

Foods are divided into five classes:

1. **Proteins.** The tissue or lean meat builders, which may also be used to produce heat, are obtained from lean meat, eggs, milk, cheese, fish, dry peas and beans, wheat, oats, and in small amounts from any cereal except rice. Each food has its own specific kind of protein, yet all have the general characteristic of coagulating at a low temperature and hardening and contracting at a high temperature. The protein in milk and cheese is known as *casein*; in eggs as *albumin*; in wheat as *gluten*; in peas and beans as *legumen*; in lean meat as *myosin*; in blood as *fibrin*.

All protein foods should be cooked at a tem-

perature *below* the *boiling* point to insure ease in digestion.

2. **Starches and sugars, carbohydrates.** These fatty-tissue builders and heat producers are obtained from fruits, vegetables and cereals.

Almost all plants have their own kind of starch, as corn starch, rice starch, wheat starch, potato starch, etc. Commercial sugar is obtained from sugar cane and the sugar beet. We obtain sugar also from fruits, milk, corn, cereals, sweet potatoes, and peas.

3. **Fats and oils.** The decided heat producers are fats and oils. In a small way they produce fatty-tissue. We obtain most of these from butter, meats, nuts, salad dressings, cheese, milk and chocolate. The digestive organs can take care of only a limited amount of these at a time; there is great danger in over-eating.

4. **Minerals.** Some inorganic materials such as salt, lime, iron and sulphur are valuable in the building of the solids of the body and the blood. They are obtained from fruit, vegetables, grains and animal foods.

5. **Water** acts as a solvent and is necessary in the fluids of the body.

BALANCED RATIONS

To take within our bodies, each day, the proper proportion of proteins, fats and carbohydrates,

and, on the other hand, have these in sufficient quantities to meet the needs of the various conditions brought about by climate and vocation, is called "balanced rations." So important is a thorough knowledge of *balanced diet* to every boy and girl that a chapter will be devoted to it later, under "Dietary Standards."

ACCESSORIES

Numerous other substances are taken into the body which are not foods, but in food combination add to the attractiveness of the dishes by giving odor and taste. These are:

Flavors. The various oils and essences, as vanilla, lemon, etc.

Stimulants. Alcohol, tea, coffee, cocoa, beef tea.

Condiments. Salt, pepper, mustard, spices.

In other chapters these will be treated more fully, but too much emphasis cannot be placed upon the injurious effects of the over-use of these accessories.

COOKING

Cooking is the preparation of food by means of heat to develop new flavors, or to make it more palatable and digestible, and to destroy micro-organisms.

METHODS OF COOKING

Baking is cooking by means of dry, confined heat.

Roasting really means exposing food to the direct rays of a fire. Before the invention of ovens all foods not cooked in water were roasted, but now it is very unusual to taste a piece of roasted food. Meats spoken of as roasts, are really baked meats.

Broiling is a combination of baking and roasting. The meat is exposed to the direct rays of a fire, yet in the broiler attachments to the new stoves the heat is confined. In broiling we use thinner cuts of meat than for a roast, with as much surface exposed as possible.

Pan-broiling means that the food is placed on a very hot iron surface and turned continually until sufficiently cooked. No fat is used and if any collects, it is removed. This is the most satisfactory way of cooking game or fowl for convalescents.

Frying is a method of immersing the food in deep hot fat. Degrees of heat used for frying are not general as vegetable oils may be heated to a higher degree than animal oils.

Sautéing is very much the same as pan-broiling, except that in sautéing the fat is allowed to collect or is added as the food is cooked. This method

of cooking has been improperly termed frying.

Fricasseeing is sautéing and serving with a sauce or gravy. Very thin steaks or jointed chickens are the foods commonly cooked by this method.

Boiling means that foods are cooked to the desired degree by being placed in boiling water.

Stewing means cooking to the desired degree in water just below the boiling point. This is the best method for all protein foods as the albumen will coagulate instead of contracting and hardening, as when strong heat is applied.

Steaming food means cooking over hot water in vessels that confine the steam. This is the best method for young, green vegetables, potatoes that have a tendency to fall to pieces when partially cooked, and some meats.

Fireless cooker. Vessels for holding foods are placed in boxes or cases so packed that when the hot food is placed in them and the lid fastened down, there will be little change of temperature for from eight to twelve hours. Sometimes a hot soapstone is placed under the vessel. For cooking meats, fowls and cereals they have no equal. Sherbets and creams, if cooled to the freezing point before being placed in the cases, will continue to freeze. The theory of this invention is insulation to prevent change of temperature.

DEGREES OF HEAT IN WATER

Luke-warm. When a tin vessel holding the water can be held with comfort in the hand.

Scalding. When steam arises.

Simmering. When tiny bubbles collect around the sides and on the bottom of the vessel.

Boiling. When these bubbles arise to the top, burst and send out steam.

DEGREES OF HEAT IN THE OVEN

Warm. When the hand may be held in with comfort.

Moderate. When a piece of white paper will brown in 10 minutes.

Hot oven. When a piece of white paper will brown in 10 seconds.

Most of the new kitchen ranges have thermometers in the ovens with the different degrees of heat registered. This is the only true way of testing heat, but until we are all supplied with new stoves, the old methods of testing must be used.

ABBREVIATIONS

Some teachers prefer to use the small "t" for teaspoon and the capital "T" for tablespoon. It makes very little difference if the same abbreviations are used throughout the work, but since the

true abbreviations for the words are “tsp.” and “tbsp.” they will be used in this text:

tsp.....teaspoon	qt.....quart
tbsp.....tablespoon	pt.....pint
c.....cup	oz.....ounce
m.....minute	lb.....pound
cm.....cream	Ind.....Individual
B. P.....Baking Powder	

All measures used in cooking are level. Pupils must not be allowed to use “rounding” or “heaping” measures in any recipe.

To get *one* spoonful, take upon the spoon all that it will hold, then with the sharp edge of a knife level it smooth to the edge of the spoon; *one-half* spoonful, the spoonful is cut in two lengthwise; *one-fourth* spoonful, the half-spoon is cut in two crosswise; *one-eighth*, the fourth is cut in two crosswise, etc.

All liquid measures should be leveled off, the same as dry measures. In small amounts and with thick materials as molasses the amount that would adhere might be enough to cause a failure.

WEIGHTS AND MEASURES

3 tsp.1 tbsp.	2 c. ground meat..1 lb.
16 tbsp.1 cup	15 lbs. potatoes....1 pk.
2 cups1 pint	16 ozs.1 lb.
4 c. flour1 lb.	2 tbsp. butter....1 oz.
2 c. butter1 lb.	4 c. shelled nuts..1 lb.
2 c. g. sugar.....1 lb.	1 egg, mixed.3 to 4 tbsp.

CHAPTER II

MILK

Milk contains all of the elements necessary to sustain life and to build body tissues of the very young or of inactive people, but, when activities that require a great deal of energy are begun, milk will not suffice, as it is lacking in carbohydrates, as will be seen by the following table:

Water	Fats	Sugar	Casein	Albumen	Minerals
87%	4%	5%	2½%	½%	1%

This will prove why bread and milk is a healthful food for children. The fats in milk are in the form of tiny globules, so small and so evenly distributed through the milk, that in fresh milk they can not be observed without the aid of a magnifying glass, but if left undisturbed in a cool place the fat particles will rise to the top as cream.

Test. Put 1 tbsp. of vinegar and 1 tsp. of an oil in a bottle and shake well. Notice how the oil is broken up into tiny particles. This represents the fats in the milk as they would appear, if magnified. Hold the bottle still, and notice how the globules run together and gather at the top. This explains to you how *cream rises*.

The fat of milk is commercially its most important element, since from it we get the cream and the butter, and it enters largely into cheese making.

The sugar in milk is known as milk-sugar or "lactose," and is not so sweet as cane sugar. It is collected from the whey after cheese has been made and is used in the manufacture of medicines and baby foods.

The casein, a protein, may be seen by adding acid to milk. The tiny flecks you see are the casein, which the acid has caused to contract and separate from the water. This will be discussed in detail under "Cheese."

The albumen, another protein, may be seen by placing milk over a hot fire. The scum which collects on the top is the albumen which has been hardened by the heat.

The mineral matter in milk is made up largely of phosphates and lime.

How milk is classified. Whole milk is that which contains all of its elements; skimmed milk, that which is left after the cream has been taken; buttermilk, the milk left after churning; the fats have practically all been removed, and the lactic acid which caused the milk to sour has separated the casein from the water. Since the fat has been removed and the acid has performed some of the functions of stomach digestion, butter-

milk is sometimes recommended by physicians in cases of intestinal troubles.

Why milk sours. Milk is subject to a great many chemical changes as it presents favorable conditions for the growth of various bacteria, but the one most common is "souring," due to the forming of lactic acid. This acid develops very quickly in milk, if the temperature is above 40 degrees. The widespread belief that thunder or lightning sours milk is unfounded. Souring at such times is brought about by the atmospheric conditions. The same climatic condition that produces electricity during a thunder storm will cause milk to sour.

The chief sources of bacteria in milk are, health conditions of the cow, the stables, the feed, the utensils and the milkers. The general belief now is that milk is never entirely free from bacteria; yet the milk from dairies where the vessels are thoroughly scalded and cleaned, the milkers work with clean hands and clothes and the animals are thoroughly cleaned and are healthful, tests practically pure.

On the other hand, pure, clean milk is often sold to a person who leaves it uncovered where flies or dust can get into it, or turns it into a poorly washed vessel, or places it in a warm, moist place where odors from other foods can get to it. Tests have been made and by great care milk has been

kept sweet 21 days by simply using cleanly methods. Many preservatives are used to prevent milk from souring, but in all cases these are injurious to the health of the consumer.

While slight warmth promotes the growth of bacteria, extreme heat kills them. Unfortunately heat sufficient to kill bacteria causes chemical changes to take place in the milk. However, heat is often used and the two most common methods are *pasteurization and sterilization*.

Pasteurization requires just enough heat to destroy as many bacteria as possible without making a chemical change. Milk is placed in jars, sealed and immersed to the neck in hot water and heated to 150 F., let stand for 30 minutes, then removed and cooled quickly. Rapid cooling lessens the "cooked" taste.

Sterilized milk has been heated three successive days to boiling point and continued at that degree for 15 minutes. Sterilized milk will remain sweet in a warm place several days, but the extreme heat has caused an undesirable change.

Condensed and evaporated milk and milk powders are forms of canned milk, which have been heated until all of the water has evaporated. Effect of *strong heat* upon milk has been seen in the test for albumen. The protein becomes so contracted and hard that the digestive fluids can not liquify it. *All foods containing milk should be*

cooked below the boiling point. Double boilers and fireless cookers have done much toward the proper cooking of milk in food combinations.

WHITE SAUCE

The thickness of the sauce desired is regulated by the number of tablespoonfuls of flour and butter used to 1 cup of liquid. Since the amounts of flour and butter are the same we indicate the consistency as:

“One to one” white sauce means 1 tbsp. each flour and butter to 1 c. milk,—used mostly for thickening soups.

“Two to one” white sauce means 2 tbsp. each butter and flour to 1 c. milk,—used for creamed vegetables, heavy gravies and purées.

When a very heavy sauce is desired, as for croquettes, the amount of fat is decreased as the amount of flour increases as; 2 tbsp. butter, 5 tbsp. flour, 1 c. milk and would be given as “2 to 5 to 1.”

In making small amounts for class work the evaporation will be relatively so much greater than for a large amount—that, in a recipe which calls for 2 c. white sauce “2 to 1,” one-fourth cup would have to be made “1 to 1” to give the desired consistency.

Melt the butter slightly, blend it with the flour, add the liquid and cook over boiling water about

8 minutes, until thick and the starch in the flour has a clear look. Add the salt last. The usual amount is $\frac{1}{4}$ tsp. to the cup, but that depends upon its use. Two tbsp. grated cheese added to 1 c. white sauce is called cheese sauce. Tomato juice used in place of milk is called tomato sauce.

Why starch thickens. If we were to examine the fine white powder through a microscope, we would see that each grain resembles a white marble. This expands and bursts in sufficiently moist heat.

TESTS

1. To 1 tsp. starch add 1 tbsp. cold water, mix well, add $\frac{1}{2}$ c. boiling water and cook three minutes.

What change has taken place in the color? In the consistency?

2. To 1 tbsp. starch add $\frac{1}{2}$ c. boiling water. Cook 3 minutes.

What change in consistency do you find as compared with that in the first test?

3. To 1 tsp. starch add 1 tsp. fat or oil, blend well, add $\frac{1}{2}$ c. boiling water and cook 3 minutes.

What consistency do you find? -

MOCK OYSTER SOUP

1 c. whole milk

2 crackers

$\frac{1}{16}$ tsp. salt

Spread the crackers with butter and place in a soup dish. Heat the milk to scalding point over hot water, pour it over crackers and serve hot.

1. In what one of the food classes is milk deficient?
2. Why is milk, alone, not a perfect food for a child old enough to go to school?
3. Why is milk a perfect food for a baby?
4. Give four reasons for milk souring.
5. Why should milk or foods containing milk not be cooked at a boiling temperature?

Note: Unless otherwise stated, the recipes may be considered to be for individual service.

CHAPTER III

EGGS

Eggs, another form of protein food, are in a sense a perfect food since they contain all of the elements necessary to life. The entire body of the chick is formed inside of the shell, yet when it is hatched and begins to move about, the elements in different proportions must be taken up by its body to keep it alive and growing.

Eggs, like milk, lack the carbohydrates, and as soon as the chick begins to use muscular energy, he is fed upon cornmeal or other starchy foods to insure his supply of energy-producing material. The proportion of elements in the egg is:

Water	Protein	Fat	Carbohydrates	Minerals
74%	13%	12%	1%

Perhaps no article of diet of animal origin is more commonly eaten in all countries, or served in a greater variety of ways than eggs.

Hens' eggs are most common, although the eggs of all fowls and most birds are used to some extent. Turtle eggs are highly prized in some countries, and fish eggs, under the name of caviar are sold in large quantities.

The different parts of an egg are: Shell, lining, air space, white, twisted cord, yolk, and embryo.

The white is nearly pure albumen and water, with a percentage of sulphur; the yolk contains fat, albumen and a number of minerals in small quantities; for example, iron, sulphur, etc.; the shell is made up of mineral matter, principally lime. The embryo, on the yolk, is the germ from which the life of the young chick starts. The cords hold the yolk in place.

HOW TO TELL FRESH EGGS

1. If, when held between your eye and a strong light, the egg is clear with a dark spot in the center it is fresh; if it is cloudy, it is stale. This is called "candling."

2. Drop an egg into fresh water. If it is fresh it will sink; if it comes to the top it is stale or spoiled.

3. Shake an egg close to your ear; if it rattles it is spoiled.

4. The shell of a fresh egg is rough; that of a stale egg is usually smooth.

WHY EGGS SPOIL.

1. The shell is porous and when the egg is exposed to the air, the water in the egg evaporates and air enters and takes its place. Bacteria, entering with the air, begin working and soon the egg is stale or spoiled, according to the length of time it is exposed.

2. When subjected to heat equal to that of the body of the hen, about 78 degrees, the germ of the chick will begin to develop and within a few days the egg will be unfit for use.

Many ways of preserving eggs have been tried and a few have been successful. If, when eggs are plentiful and selling at a low price, they can be packed away and kept fresh until they are scarce, an important problem in domestic economy has been solved.

Eggs should never be packed in a material that has a disagreeable odor. Musty straw or bran will injure the flavor, and crates of eggs have been ruined by leaving them near cabbage or onions.

PRESERVING EGGS

The results of preserving eggs by different methods through a period of eight months showed the following results:

Brine—salt absorbed by egg, not edible.

Wrapped in paper—80% bad.

Rubbed with salt—70% bad.

Packed in bran—70% bad.

Covered with paraffin—70% bad.

Partially sterilized by placing in boiling water for 12 to 15 seconds—50% bad.

Varnished with vaseline—all good.

In lime water—all good.

In solution of water glass—all good.

Cooking. Coagulation is the solidifying of the albumen by means of heat. If coagulated rapidly the albumen becomes hard and contracts and is hard to dissolve. If coagulated slowly it is easily dissolved. In the cooking of eggs it is necessary to keep this in mind, and cook them very slowly or at a temperature below the boiling point. As one of the functions of stomach digestion is to liquify its contents, the easier a substance is liquified the quicker it is digested and the less strain on the digestive organs.

SOFT-COOKED OR "BOILED" EGGS

Drop an egg into a pan of water that is just below the boiling point and let stand from 3 to 5 minutes. When broken, the white will be jelly-like and the yolk heated through.

POACHED EGGS

Break an egg into a pan of simmering salt water, deep enough to cover the egg. When the white is firm, remove and place on buttered toast. Scalding hot milk may be used in place of water.

HARD-COOKED OR "BOILED" EGGS

Drop an egg into a pan of water just below the boiling point, turn the fire very low and cook at the same temperature 40 minutes. Remove the

eggs and place in cold water for a few seconds, then take them out of the cold water, put away and cool before taking off the shell. This insures a dry mealy yolk and a firm but not tough white.

GOLDEN-ROD EGGS

1 hard-cooked egg 1/3 c. white sauce "2 to 1"

Dice egg white and add to white sauce. Turn into a toasted bun cup. Press yolk through a ricer and pile on the top. A slice of toast may be used in place of the bun cup.

TOASTED BUN-CUPS

Cut off the bottom crust of small buns and partially hollow out. Butter the inside and toast in a hot oven. They are very nice to use in serving creamed meats.

EGG SANDWICHES

(8 sandwiches)

2 hard-cooked eggs	1/8 tsp. salt
1/2 tsp. celery salt	1/2 tsp. paprika
1 tbsp. melted butter	2 tbsp. mayonnaise

Rice the yolks, add chopped whites and blend with it the other ingredients. Cut bread very thin, brush each side with melted butter, spread on a layer of the egg mixture, press down the other slice and cut in triangular slices.

Approximate cost, 8 cents.

FOAMY OMELET

Beat the white of one egg stiff and dry. Add 1 tsp. water to the yolk and beat until lemon colored. Fold into the white, add $\frac{1}{8}$ tsp. salt and turn into a well greased and hot omelet pan. When brown on the under side, place in a hot oven to cook the top. When firm, remove from the oven, slip a spatula under the side nearest the handle and fold. Garnish with parsley.

BREAD OMELET

Soak 1 tbsp. small pieces of bread in 2 tbsp. milk. Add egg yolk and white, beaten stiff and dry. Cook as foamy omelet.

SCRAMBLED EGGS

1 egg	$\frac{1}{2}$ tbsp. milk
$\frac{1}{2}$ tsp. butter	$\frac{1}{16}$ tsp. salt.

Melt butter in pan that is heated over hot water. Mix egg thoroughly with milk and turn into the melted butter. Stir continually until the egg is cooked to the desired consistency. (If cooked at a low temperature hard-cooked eggs are digestible.) Add salt last and serve on toast or on a warm plate.

CHAPTER IV

VEGETABLES

Fresh vegetables are composed mainly of water, but all of the five food principles may be obtained from the vegetable kingdom. Dry vegetables, as peas and beans, contain a higher percentage of starch and protein than the fresh vegetables. All vegetables have in their construction a woody fiber called *cellulose*. In cooking vegetables the main object to attain is the softening of this cellulose so that it may be more easily digested. Plants that grow rapidly, with plenty of moisture and sunshine, have little of this when very young, but more when old. Radishes and asparagus are good examples.

Vegetable protein occurs as legumen and gluten substances.

Vegetables are rich in minerals, especially iron, potash and phosphate.

Vegetable protein lies near the outer surface of the different grains and vegetables.

All green vegetables contain a coloring matter, chlorophyll, which develops in light and air. Chlorophyll develops best in the presence of iron,

and is essential to the continued growth and development of all green plants. If green plants are covered so that light cannot reach them a change takes place in the chlorophyll and it is bleached out. Celery, lettuce, endive, and other salad plants are bleached and it is believed that in the bleaching, strong flavors are diminished.

Vegetable foods are divided into:

Cereals, which include all grains, as corn, wheat, etc.

Legumes, as peas, beans, lentils.

Tubers, as potatoes.

Roots, as turnips, beets, radishes.

Bulbs, as onions, garlic.

Greens, as lettuce, celery, spinach.

Fruit, as tomatoes, pumpkin, cucumber, melons.

Flower, as cauliflower.

Digestibility of vegetables. Aside from the amount of tissue-building material they contain, vegetables aid in the process of digestion by furnishing bulk, or substances which help carry the foods along the digestive tract. Many times we should eat vegetables whose building properties are very low, simply for the bulk they furnish. Cabbage has very little material for the body, yet it is recommended by dietitians as a proper food, occasionally, for well people. By cooking, the cellulose is softened and it is not irritating to the digestive organs.

COOKING OF VEGETABLES

The preparation of vegetables for cooking varies with each kind, so that no general rules can be given except these:

1. Vegetables *wilt* because some of the water in their cells has evaporated; therefore all wilted vegetables should be soaked in cold water before being cooked.

2. Vegetables have *decayed* places on them because bacteria have begun their work; all decayed places must be removed.

3. In preparation for cooking, vegetables that form heads, as cabbage, cauliflower, etc., should be soaked, heads down, in cold salt water to which has been added a small amount of vinegar. If there are any worms in these vegetables they will crawl out.

To secure the best results in cooking vegetables, all except the dry legumens, should be put in boiling salt water, and allowed to boil until tender. Green peas and beans should simmer; greens should boil gently, or be steamed so as not to break them. A little soda added to the water helps dissolve the cellulose, but too much destroys the flavor and its use is not recommended. Briefly, the changes which take place in the cooking of vegetables are:

Cellulose tissues are softened and loosened.

Protein substances coagulate.

Starch grains swell and burst.

Flavors and odors are developed.

THE POTATO

In a text on agriculture read the chapter on the potato: of the soil, time of planting, care, market, etc. From a geography make a list of states or sections of the country where potatoes grow best.

Examine a cross-section of a potato and notice the three distinct layers:

1. The brown outer skin, of no food value.
2. A broader white layer inside the skin. This contains the largest amount of the mineral and protein.
3. The flesh of the potato and a center core with decided arms extending into the flesh. These are the cells holding the water in which the tiny starch grains float.

Scrape a tablespoonful of the potato flesh and place it in a thin cloth. Squeeze it until you can get no more moisture from it. In the cloth you will have a dry fiber, or broken-down cell walls which hold the starch and water. After the water has stood a few minutes you will find a white sediment. This is starch. By this time the water and cellulose has turned a reddish brown. This change of color in many fruits as well as in pota-

toes is due to the action of the oxygen in the air upon the wet minerals.

The potato is composed of:

Water	Starch	Cellulose	Minerals	Protein
75%	18%	4%	1%	2%

1. The potato belongs to what class of foods?
2. Why do we get more food value from the potato that is cooked with the jacket on than from one that has been peeled?
3. In what food principle are potatoes lacking?

EFFECT OF HEAT

Heat causes the water in the cells to expand and change to steam. As it expands it presses hard against the cell walls and they are broken down and the starch grains are freed. They also expand and change in color.

This is the reason why a potato which has been cooked in the jacket should be pierced to allow the steam to escape, otherwise the steam will change back to water and the potato will be soggy. For the same reason potatoes should always be served in an uncovered dish.

A theory of long standing, that potatoes should be plunged into boiling water, is perhaps not a bad one to follow, but tests prove that peeled potatoes lose very little of their value if placed in cold water, while potatoes cooked in their jackets lose none at all in that way.

BOILED POTATOES

1 potato

 $\frac{1}{4}$ tsp. salt

Boiling water to cover.

Wash, pare very thinly, remove eyes, and rinse in cold water; place in the boiling salt water and cook very slowly until it can be easily pierced with a tooth pick. Let the water boil very gently, as vigorous boiling wears away so much of the potato. Drain off the water and shake over the fire until dry and "snowy." Chopped parsley sprinkled over just before serving adds to the appearance and food value.

We add salt to the water, not to flavor the potato, but to increase the density; that is, raise the temperature at the boiling point, as the thicker the liquid, the higher the temperature is at boiling point.

At certain seasons of the year potatoes, if cooked by this method, will break to pieces before they are done. At such seasons the only satisfactory way is to steam them. The price of a steamer will be saved many times by the saving of the potatoes.

BOILED POTATOES IN JACKETS

Wash, clean, and cook as above. These may be skinned and sent to the table hot or allowed to cool, then skinned and cooked as German sauté or hash brown potatoes.

Test a small amount of the potato water from each recipe with iodine and observe the difference in the amount of starch. (Iodine is a liquid which turns all starchy substances blue.)

Place a drop of iodine on a cracker, on some sugar, on some butter, bread, flour, meat. Note the difference. Which contain starch?

BAKED POTATOES

Use medium sized potatoes. Scrub thoroughly with a brush. Oil lightly, place on the grill of a hot oven, and bake until they can be easily pierced, from 20 to 40 minutes. Roll in a clean napkin and twist until the skin is broken, or pierce several times. Serve in an *uncovered* dish.

1. Why oil the skin?
2. Why twist and break the skin?
3. Why serve potatoes in an uncovered dish?

BAKED POTATOES ON THE HALF-SHELL

Cut off the end of a baked potato, scoop out, and season. To every cup of the potato, add $\frac{1}{4}$ tsp. salt, dash pepper, $\frac{1}{2}$ tsp. butter and 1 tbsp. cream (sweet or sour) or milk. Beat until light and creamy. Refill the shell loosely and heap above the shell. Return to the oven to brown.

Grated cheese may be sprinkled over the top before returning to the oven to brown.

If the potatoes are allowed to cool before sea-

soning and refilling the shell, the beaten white of an egg folded into them adds much to the lightness of the filling.

1. Why add butter and milk to the potato?
2. What combination of food does it give you?
3. Why does the grated cheese sprinkled on the top add to the food value?

GERMAN SAUTÉ

(Serve 6)

3 c. cold boiled finely chopped potatoes, cooked in jackets.

3 slices bacon, sautéed crisp and cut fine.

$\frac{1}{2}$ c. finely chopped onion. 1 tsp. salt—dash pepper.

Mix thoroughly and turn into skillet where the bacon was rendered. Cover and cook very slowly, stirring as they brown on underside, so as to brown evenly, through and through. Serve hot.

Just before serving, $\frac{1}{2}$ c. cream may be turned over the potatoes, the lid replaced and the whole allowed to steam for a few seconds. This softens the brown crusts and adds to the flavor.

BOILED CABBAGE

After cleaning as directed in "Preparation and Cooking of Vegetables," cut fine and put in a stew pan with enough boiling water to cover. Cook from 25 to 45 minutes, depending upon the age of the cabbage. Drain for 2 minutes in a colander, season with salt, pepper and butter.

If cabbage is cooked in a great amount of water with the lid *off* the odor will not be noticeable. To 1 c. shredded cabbage, use 5 c. of water, and as the water evaporates add more.

BOILED CABBAGE WITH PORK

Boil the pork until tender, adding the cabbage as directed above, and serve all together.

CREAMED CABBAGE

Boil cabbage as directed. Make cream sauce or cheese sauce "2 to 1." Put cabbage in baking dish, turn sauce over it, sprinkle with buttered crumbs, and brown. (See "white sauce.")

CREAMED CAULIFLOWER

Use only the flowers. Soak in cold, salt, vinegar water for an hour, cook as "Boiled Cabbage" and turn over all a cheese sauce.

SPINACH

Pull the leaves from the roots, drop in a pan of water, wash well in two waters, shaking each leaf separately. Throw into a kettle, with only the water that is on the leaves, and cook with the lid on for 20 minutes from time it begins to steam. Pour spinach in colander and drain thoroughly. Place in a dish, add salt, pepper, butter and hard-

cooked egg cut in slices. One peck of spinach will make $1\frac{1}{2}$ pts. when cooked.

Mustard greens should cook from one to three hours very slowly. The cellulose in these greens is very hard to soften.

BOILED BEETS

Wash the beets well, being careful not to break the skin; also leave about 2 inches of the top on. This will keep in the red coloring matter. Drop in boiling water. Young beets will cook in one hour, but old beets sometimes require as long as 4 hours. Put in cold water, slip off the peeling and prepare as:

1. Buttered beets, by dicing and adding salt, pepper and plenty of butter, then reheating.
2. Pickled beets, by slicing and covering with half vinegar, half water, and allowing to stand 24 hours.

ASPARAGUS

Cut off the lower, woody part of each stem. Wash well, tie in a bunch, and stand in a pan with the tender ends up. Fill the pan with enough boiling water to cover and cook until tender, about 15 minutes. Drain, season with salt, pepper and butter or make a "3 to 1" white sauce and pour over. This is often served on toasted points. After the cooked asparagus has drained and cooled, several sticks may be arranged on a let-

tuce leaf, with French dressing or mayonnaise over it and served as a salad.

CANDIED SWEET POTATOES

Skin boiled sweet potatoes and cut in lengthwise slices. Place in an earthen dish, put lumps of butter on each slice and sprinkle with sugar. Bake until the butter and sugar has candied and the potatoes are brown.

SWEET POTATO PUFFS

Cut baked potatoes in halves, scrape out the inside, season with salt, pepper, butter and chopped nuts, refill shells, leaving a rough surface, and brown in a hot oven before serving.

TOMATOES

To peel: Put ripe tomatoes in a dish, pour boiling water over them and let stand one minute; pour the water off, and pour on cold water; turn this off immediately and cool. The thin skin will slip off readily, and the tomato will retain its shape.

SCALLOPED TOMATOES

(Serve 6)

2 c. peeled tomatoes	1 tsp. salt
2 c. bread chunks	1 tbsp. butter
Reserve $\frac{1}{4}$ c. crumbs for the top	

Add the salt and bread chunks to tomatoes. Put in baking dish, dice butter over top, add crumbs and brown in an oven. One tbsp. or more of diced onions may be added if desired.

CREAMED ONIONS

Select small onions of uniform size. Remove roots and outside skin. Cook until tender in enough boiling water to cover, with the lid off. Drain and pour over, for each onion, 2 tbsp. white sauce "2 to 1" and serve.

GREEN CORN

The most satisfactory way to serve green corn is on the cob. Remove the husks and silks and any brown places on the cob or corn. Drop the ears in a kettle of boiling water, and boil rapidly for 20 minutes. Drain before serving.

TURNIPS

Wash, peel and if very large, quarter. Cook until tender in a large amount of water, just at the boiling point. Drain, and season with salt, pepper and butter.

Creamed turnips: mash the boiled turnips thoroughly, add salt, pepper, butter and cream.

CREAMED CARROTS

Wash and scrape the carrots thoroughly. Dice

and cook until tender in boiling water. Drain and serve with a white sauce "2 to 1."

Many people are not fond of carrots, but they contain a high percentage of mineral, and their cellulose is so easily softened that they are a very desirable food.

CREAMED STRING-BEANS

$\frac{1}{4}$ c. golden snap beans $\frac{1}{8}$ c. white sauce "2 to 1"
1 slice toasted bread

If canned beans are used, add to the white sauce, and cook over water 10 minutes. Turn onto toast and serve hot.

If fresh beans are used, they should be cooked in boiling water until tender, then measured.

CREAMED PEAS

1 tbsp. peas 2 tbsp. white sauce "2 to 1"
1 slice toast or 1 patty shell

Cook as for creamed beans.

Peas and beans belong to a family of vegetables known as the pulse family. Dried, they are very rich in nitrogen and their principle protein is known as "legumen." They are, therefore, often called legumens. On account of their large amount of protein they are sometimes styled "Poor Man's Beef." They are also very rich in carbohydrates, but are poor in fats, and for that

reason are usually served with fatty foods. Served with a cream sauce they make a well-balanced food.

Fresh peas and beans should be cooked immediately after picking as they lose both in flavor and value by evaporation. When "fresh with the dew from the garden" they are at their best.

1. What names are given to vegetable protein?
2. Name some minerals that are found in vegetables.
3. Give three reasons for a strong vegetable diet.
4. What do we mean by "coarse vegetables"?
5. Why do we need "coarse vegetables"?

CHAPTER V

SUGAR

Sugar, one of the carbohydrates, has its source in fruits, cereals and vegetables, as well as in milk. There are several kinds of sugar:

Sucrose, cane or beet sugar, very sweet.

Lactose, milk sugar.

Glucose, made from corn starch. It is not as sweet as cane sugar and does not crystallize readily, hence its value in making some candies.

Dextrine, a sugar which is produced in the process of digestion, also, by applying heat to starch, as in toasted bread.

Commercial sugar is made from the juice of sugar cane, beet roots, and maple trees.

Sugar cane is a tall plant of the grass family resembling corn, cultivated extensively in the South for use in making syrup and sugar.

Sugar beet is a large white variety of beet, from the juice of which sugar is made. It is cultivated extensively in Colorado, New Mexico, Michigan and California.

Maple sugar is made from the juice of a maple tree which grows in northeastern United States.

There are two kinds of granulated sugar,—beet

and cane. Often beet sugar has a blue tinge and cane sugar a yellow tinge, though when both are highly refined there is no distinction between them.

In cane sugar the sweet juice which is obtained by crushing the cane between large rollers is boiled down to a thick syrup. As it slowly cools part of it separates into crystals. The liquid that will not crystallize is called *molasses*. After draining this off the impure product called raw sugar (brown sugar) is left. This is mixed with water and filtered several times and then boiled down in covered vessels which contain no air. Granulated sugar is made by putting the syrup into revolving vessels, the centrifugal force forming the granules. Other kinds of granulated sugar are block sugar and powdered sugar.

Block or cut sugar is the purest kind and is made by running the syrup into molds where it hardens. When taken from the molds it is sawed into blocks. An inferior kind of square loaf sugar is made by pressing granulated sugar into cubes.

Powdered sugar is made by pulverizing the sugar particles left from sawing the block sugar.

Brown sugar is the unrefined cane sugar.

Molasses is the thick brown syrup which drains from the sugar in the process of manufacture.

Sugar is often adulterated by adding to it white sand, lime dust, or starch. As pure sugar dis-

solves quickly in warm water, the presence of foreign matter may be readily detected.

The digestion of sugar requires less energy on the part of the digestive organs than any other food, on account of its solubility, but since the body can care for only so small an amount at a time, people commonly eat too much and a great amount ferments and causes digestive disturbances.

Effect of heat upon sugar. Heat changes sugar chemically almost as soon as it is applied. When sugar is melted over a slow fire, it has been changed to *barley sugar*; when barley sugar has begun to brown we have *caramel sugar*; burned until it is black we have *carbon*. In each sugar, some of the sweetness has been lost, until, if you were to taste the carbon, you should find it bitter. This proves to us that when cooking fruits or vegetables, where sugar is to be used, it must be added just in time to melt it as the longer it cooks the greater the loss of the sweet taste.

Sugar as a food is both wholesome and pleasant. It is also one of the best and cheapest sources of body heat and energy. Children, who are naturally more active than grown people, require more sweets. A moderate amount of candy is good for children, but it should be eaten immediately after meals, otherwise it spoils the appetite for other foods.

Since sugar, in any form, is a food, and candy is the most attractive form of sugar, and people, especially children, will have candy, it is wisdom for every girl to learn to make pure simple candies, and make them often in the home. The "penny-candy" habit has brought more harm to children than any other source of temptation set before them. Cheap candies are often full of poisonous colorings and flavorings and contain adulterations that stunt the growth and ruin the health of thousands of their users.

CANDY MAKING

The different stages of sugar cookery in candy making are, soft ball, hard ball, crack, and hard crack.

The sugar and water boiled together reaches the "soft ball" stage when a portion dropped into cold water can be gathered up into a soft ball.

The "hard ball" stage is reached when the portion tested forms a firm, compact ball.

At the "crack" degree, the portion tested becomes slightly brittle and can no longer be molded into a ball.

The "hard crack" is the stage at which the portion tested becomes hard and brittle.

After the hard stage is passed, the syrup gradually changes color, becoming first light yellow,

then brown and finally a deep red. These represent the different stages of caramelization.

At the last stage the sugar has lost its sweet taste and is used for coloring soups and gravies.

At the intermediate stage it is used for flavoring ice creams and custards.

These different stages may be easily determined by the use of a thermometer, which is the most accurate way of testing.

In most candies the object is to prevent the recrystallization of the sugar, or to insure its formation in minute crystals, that the candy may be creamy. This may be brought about by inverting a portion of the sugar: first, by long boiling, with the addition of at least half as much liquid as sugar, or by the addition of an acid as vinegar, lemon juice, or cream of tartar (an acid salt); second, by melting the sugar at a high temperature with no addition of liquid.

PEANUT BRITTLE

1 c. sugar

1 c. shelled peanuts

Put the peanuts on a buttered tin plate. Heat the sugar slowly until it is a brown color (caramel). Pour over the peanuts. Even the thickness in the pan by tilting.

Weigh the candy, note the cost and compare with the selling price. Do not attempt to make more than one pound of this at a time, as in melt-

ing large amounts of sugar some will burn before the rest can melt.

NUT TAFFY

2 c. sugar	1 tsp. vinegar
1 c. water	1 tsp. butter
$\frac{1}{2}$ c. chopped nuts	

Cook sugar and water together until sugar is dissolved. Add the butter and vinegar and cook to the hard ball stage. Pour into buttered pans on which the nuts have been spread. When cool enough to handle, pull until white and hard. Twist into ropes $\frac{1}{2}$ inch in diameter and when cold break into small pieces.

COCOANUT CREAM CANDY

$1\frac{1}{2}$ c. sugar	1 tbsp. butter
$\frac{3}{4}$ c. milk	$\frac{1}{2}$ c. cocoanut
$\frac{1}{2}$ tsp. vanilla	

Stir sugar in milk, add butter and heat gradually until the butter is melted. Cook to soft ball stage. Remove from fire, beat in cocoanut and vanilla, and beat until mixture is creamy and begins to sugar around the edge. Turn at once into a buttered plate and score.

CHOCOLATE NUT FUDGE

2 c. sweet milk	2 tbsp. butter
1 tsp. vanilla	2 c. sugar
$\frac{1}{2}$ c. chopped nuts	2 sections chocolate, of the $\frac{1}{2}$ lb. cakes

Melt chocolate over hot water, add milk and let it come to the boiling point. Cream butter and sugar, add to hot milk and chocolate. Cook until soft ball stage is reached. Remove from fire and beat in the nuts. Add vanilla and beat until creamy. Pour into pans and score.

A slight acid in the chocolate will sometimes curdle the milk, but this does not interfere with the creaminess of the fudge.

1. Why add the vanilla last?
2. Why beat the fudge?
3. Has fudge a food value?

FONDANT

$\frac{1}{2}$ c. sugar	$\frac{1}{2}$ c. water
$\frac{1}{8}$ tsp. cream of tartar	

Add sugar to water and stir until the sugar has dissolved. Place over a slow fire and, when it begins to boil, shake in the cream of tartar. With a wet cloth wrapped around the tines of a fork, keep the sides of pan washed clean from sugar grains that accumulate as the syrup boils. When a drop of the syrup, in cold water, may be gathered up and brought to the top, it has cooked sufficiently. Pour into a vessel, and when cold, beat until creamy. Then knead like bread for a few minutes, put in a jar, cover and let stand until ready for use. It is better if allowed to stand a few days before using.

Do not stir fondant after it begins to cook. Do

not scrape it from the pan; use only what will pour. When testing fondant or any candy always remove from the fire and wait until boiling ceases. Sometimes the few seconds between the test and the time for removing from the fire, it will have cooked too much if it was just right at the time the test was taken.

If fondant has been cooked too long and it turns to a hard sugar, equal parts of water may be added and it may be cooked again with good results.

When cooking larger amounts of sugar for candy, as 2 cups, one-half the amount of water may be used, but in small amounts, as $\frac{1}{2}$ c. of sugar, equal parts of water must be used, as the evaporation is relatively greater.

CANDIED ORANGE PEEL

Cut the rind of six oranges into fine strips. Throw into 2 qts. of boiling salt water and cook until tender, changing the water three times. Drain and dry. Make syrup of 2 c. sugar, $\frac{1}{2}$ c. water, and when it has reached the crack stage put in the peel and cook again for 2 or 3 minutes. Turn on paper, sprinkle with enough sugar to keep the strips from sticking together.

MARSHMALLOWS

1 c. sugar
 $\frac{1}{2}$ c. water

1 egg white
1 tsp. gelatine

Soak gelatine in 2 tsp. cold water. Cook sugar and water until it spins a long thread. Add gelatine to hot syrup and, when well dissolved, pour slowly over the stiffly beaten egg white, stirring continually. Beat until stiff. Pour in a shallow pan, cover with powdered sugar, and let stand until firm and cut into small cubes.

CHAPTER VI

MEATS

The food value of meat depends upon the presence of two classes of nutriment; namely, protein and fat, which build muscular tissue and yield heat and energy.

Compared with other protein foods, meat is very expensive, and in many cases it is slow to digest. Bacteria develops so rapidly in meat that, unless the digestive organs are rapid or entirely normal in their work, substances will be absorbed and thrown into the circulation which will cause general disorder.

The classifications are:

Meat: Beef, pork, lamb, mutton, veal.

Fish: Red fish, white fish, oysters, clams, shrimps, etc.

Poultry: Chicken, capon, turkey, duck, goose.

Game: Rabbit, pigeon, squab, quail, squirrel, wild duck, wild turkey.

BEEF

The fat consists of tiny sacks or cells filled with oil. In the young, well-fed beef it is firm and of a light yellow color; in old beef it is soft, flabby and of a dark yellow or straw color.

The muscular tissue, or lean meat, consists of bundles of muscular fibers or tubes held together by means of a connective tissue, which in the young beef is soft and jelly-like, while in the old beef it is firm and elastic. The bundles may be seen very plainly by examining a piece of round steak or the cross cut of a section of a rump roast. In each of the different muscles, these bundles are placed one way; and for this reason a person who carves should cut across the grain of bundles of each muscle even though he has to change the direction of his knife several times. These bundles of muscles tied together with this connective tissue may be compared to a bundle of wheat wrapped from the top to the bottom with the twine. It is easy, from this comparison, to see how carving a cross-section would give an altogether different result than cutting lengthwise of the fiber.

A fresh cut of beef should be bright red in color, but as it is exposed to the air it turns a dark color. One of the best tests for fresh meat is the odor. Do not accept a cut of meat that has the least trace of an offensive odor.

Meats are cooked for four reasons:

To loosen and soften the connective tissues.

To kill parasites and organisms.

To coagulate the protein substances.

To render it more acceptable to the sight and to develop the flavor.

In tough cuts, and by those we mean the muscular parts most used by the animal, the percentage of nutrition is greater but it also requires greater effort on the part of the digestive organs to prepare it for use, unless the method of cooking lends aid.

Strong heat hardens and contracts proteins, while slow heat coagulates them. From this we have two rules for cooking the tough cuts of meat:

First, if the flavor and nutrition is desired in the meat, strong heat must first be applied to harden the protein substances on the outside so as to keep the juices in, then it should be reduced to a temperature below the boiling point for the remainder of the cooking.

Second, if the flavor and nutrition is to be taken from the meat, as for soups and sauces or gravy, it should be placed in cold water and the temperature increased very slowly until it is simmering.

The fireless cooker method is the most successful way of cooking tough cuts of meat.

WAYS OF COOKING BEEF

Soups: Hind shank, fore shank, neck.

Stews: Chuck, shoulder, brisket, flank, ribs.

Roasts: Prime ribs, third, fourth, fifth, etc.

Pot roasts: Rump, top shoulder.

Steaks: Loin, top round, chuck, flank.

1. Give two reasons why meat is an expensive protein food.
2. Make a comparison between the fatty tissues and the lean tissues of meat.
3. What proof have we that tough meats should be cooked at a low temperature?
4. Why are some pieces of meat termed "tough" and some "tender"?
5. Why will carving a piece of meat cross-grain make it seem tender?
6. Why is the fireless cooker a successful method of cooking tough cuts of meat?

ROLLED FLANK STEAK

(Mock Duck)

Wipe a flank steak and chop it each way. Salt, pepper and spread with rendered suet. Spread over this a layer of dressing about 1 inch thick. Roll, skewer and tie. Weigh and place in a hot baking pan, which has a small amount of fat in it, and bake in a moderate oven, 20 minutes per pound. Several times during cooking baste with extra fat. Remove all fastenings, slice through meat and dressing and serve with brown gravy.

DRESSING

1 c. bread chunks	2 tbsp. chopped onion
¼ tsp. sage	½ tsp. salt

Moisten all with water or tomato juice. Handle very lightly as the crumbs are likely to become packed and the dressing will be heavy.

BROWN GRAVY

To every tbsp. of fat in the baking dish add 1 tbsp. of flour. Blend well and brown slightly, scraping loose all browned particles in the pan. Add water slowly until it is as thick as "3 to 1" white sauce. Add salt and pepper if necessary.

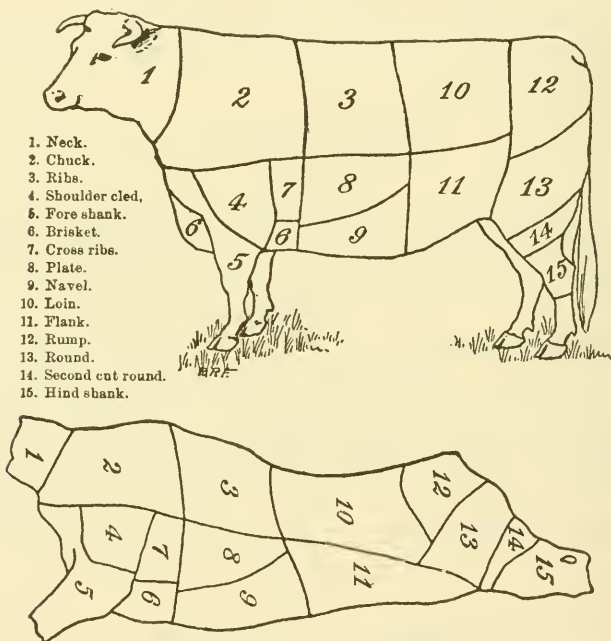


Diagram of Cuts of Beef

1. Locate on diagram a flank steak.
2. Why do the fibers of muscles all run one way?
3. Why should we add fat to the flank steak?
4. Name other foods that may be served with it.

HAMBURG STEAK

(Serve 6)

1 c. ground steak (uncooked) dash pepper
 $\frac{1}{2}$ tsp. salt 1 egg
1 tsp. chopped onion, or 6 drops onion juice if preferred

Mix thoroughly. Mold into small flat cakes and sauté in hot drippings until thoroughly browned and cooked.

The round is cut from the leg of the hind quarter and is easily recognized by the round bone, near the center of the entire cut. It is one of the most nutritious cuts of the beef and is used for beef teas and juices.

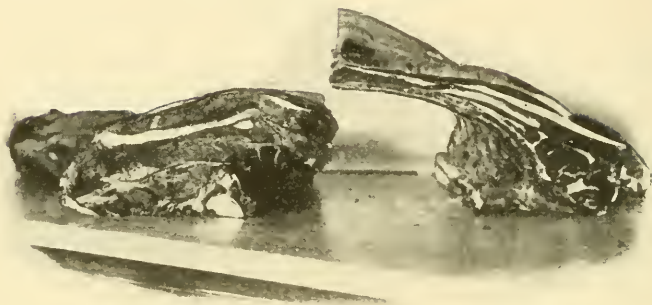
1. Why do we mix the egg with the ground beef?
2. When eggs are expensive, what may be substituted?

FRICASSEED STEAK

(Serve 4)

Use $\frac{3}{4}$ lb. cut of round steak $\frac{1}{2}$ in. thick. Salt, pepper and dredge with flour. Sauté in a sauté pan with enough fat to brown the meat well on both sides. When well browned turn in enough water to cover. Refill as often as necessary and let simmer one hour, or until tender. A bay leaf added to the water will improve the flavor.

1. Why cook so long?
2. Why use round steak?
3. What is the price per pound?



Chuck Steak
(from Shoulder)

Rib Roast



Tip of Sirloin

Porterhouse Steak
a. Sirloin b. Tenderloin



Round Steak

Flat-bone Sirloin

CREAMED DRIED BEEF

(Serve 8)

$\frac{1}{2}$ lb. chipped beef (shredded)	4 tbsp. flour
2 c. milk	4 tbsp. butter

If beef is very salt, soak in boiling water for 5 minutes. When butter is hot in sauté pan turn in the beef and cook until brown. Sift the flour over gradually, stirring continually. When well blended add the milk and cook for 3 minutes.

Instead of adding the milk, $\frac{1}{4}$ c. grated cheese and three eggs may be added and all stirred until the cheese is melted and the eggs well scrambled. This last makes a very palatable luncheon dish.

BOILED BRISKET

(Serve 4)

Cut 1 lb. of brisket into small pieces after wiping thoroughly with a damp cloth. Drop into boiling water, then reduce the temperature to simmering and cook until tender, about 2 hours. Add salt, from 1 to 2 tsp., depending upon the brand of salt.

Brisket is the cut along the end of the ribs. The cartilage on the ends of the bones, is an indication of a good cut. The liquor from this meat is excellent for cooking dumplings or potatoes.

BEEF STEW

(Serve 8)

Use 2 lbs. of neck meat, brisket, or shoulder.

Cut in small pieces and place in cold water and bring to the simmering point. At the end of one hour add 2 tsp. salt, 1 onion cut into small pieces, 4 turnips quartered, 4 carrots halved, and 20 minutes before the dish is to be served, add 4 potatoes halved, which have first been cooked in boiling salt water 10 minutes. If dumplings are to be served with this, follow recipe in chapter on "Flour." Turnips should be pared, carrots scraped and potatoes peeled very thinly before being added to the stew.

POT ROAST

(Serve 8)

Place 4 lbs. of rump meat in a large iron kettle with a piece of suet the size of a cup. Pour over enough boiling water to cover. Simmer with the lid off until the water has evaporated, add 3 tsp. salt, then turn and brown each side of the meat in the hot fat. Remove and add to the fat $\frac{1}{2}$ c. flour, mix thoroughly, scraping all of the brown particles from the sides and bottom of the kettle. Pour in cold water enough to make a brown sauce of "2 to 1" consistency.

VEAL

Veal is the flesh of a calf. In some states the law requires that calves must be six weeks old before they may be killed for veal. Since it is

immature flesh it is much less nutritious than beef, but easier to digest. The bundles of fibers are softer and the connective tissue very easy to dissolve. Being very poor in fats it is usually cooked with bacon or other fat meats.

Sweetbreads are the thymus or "throat glands" and the pancreas or "stomach glands" of the calf and are at their best while the calf is still living upon milk. They are decidedly a protein food and one of the easiest to digest.

TO PREPARE SWEETBREADS

Soak in salt water 1 hour. Throw into simmering water and cook at that temperature from 1 to 2 hours or until the connective tissue may be loosened from the glands. Cut in small pieces and serve with a cream sauce or use as equal part with peas or mushrooms, creamed.

PORK

Pork is the flesh of the hog. It is very rich in fats and contains a medium amount of protein. The indigestibility of pork, for so many people, is due to the fact that the fat is so thoroughly distributed throughout the muscular fibers as well as around the muscles, also that these fibers are very compact. It is stated that it requires one hour longer to digest pork than beef.

Acid fruits or vegetables are usually served

with pork, so the acid may aid the stomach in emulsifying the fats; thus the combination of "roast pork and apple sauce."

In a bottle put 1 tbsp. oil, 1 tsp. vinegar and shake well. The tiny particles into which the oil has been divided is called an emulsification and is one step in digestion.

The fats in cured bacon and ham are partially broken down and are more easily digested. For this reason crisp bacon is often given to children or people who can not digest other fatty food.

The cooking of pork should be thorough and very slow. In no instance should pork be broiled. Its compactness and its likelihood of containing disease germs, makes of it a dangerous food which can only be rendered safe by the slow and prolonged application of heat.

PORK CHOP WITH DRESSING

Make dressing as for mock duck, using the tomato juice. Pile the dressing in a loose mound on the chop and bake in a moderate oven 30 minutes. Make brown gravy as given in mock duck recipe.

Dressing adds the much needed starches to the meats and is also a good way to use dry bread.

The chop is cut from the small ribs and is very tender. It sells for from 15 to 22 cents per pound.

Note: Read the page in Physiology which tells of trichinae.

1. Why do we need an acid with pork?
2. How does it aid digestion?

HAM SANDWICHES

1 tbsp. ground boiled ham 1 tbsp. dressing
 ½ tsp. minced onion

Mix ham, onion and dressing. Cut white bread very thin, spread ham upon one slice. Press the other down over it and trim in any shape desired.

Bread from one to two days old makes the best sandwiches.

To make good sandwiches have a sharp knife to cut thin, even slices, add filling as thick as one slice of bread.

SANDWICH DRESSING

1 egg yolk 1 tsp. sugar
¼ tsp. mustard dash salt and pepper
 2 tbsp. strong vinegar or lemon juice

Mix well and then beat into it 1½ c. salad oil, streaming the oil into the eggs while beating. If properly made the dressing will be as stiff as beaten egg white. More acid may be added if liked.

1. Why do we not butter the bread for sandwiches?
2. Figure the cost of 1 dozen sandwiches.
3. Name the food principles we have in a ham sandwich.

SAUTÉ LIVER AND BACON

Cut strips of veal liver 1 inch thick, and 1½ inches wide. Wash in weak vinegar water, dry, salt and roll in flour. Sauté strips of bacon until crisp. Sauté liver in bacon grease, cooking very slowly until browned on both sides and well done.

To sauté bacon, have a very low fire and turn the bacon often, so the rendering will be even and the crispness thorough.

Liver is hard to digest owing to its compactness and rich composition. It is rich in protein but lacking in fats, therefore the reason for serving it with bacon. When buying liver, accept only that from a veal or young pork which has had inspection.

TO COOK SMOKED HAM

Ham should be steamed, simmered or baked to obtain the best results. If baked, a cloth covered with a thick layer of dough tucked around the meat in the pan, will keep the flavor of the meat within and will aid much in the cooking by holding the steam. The general rule is: Cook at a low temperature.

MUTTON

Mutton is the meat of sheep. It is compact, but its muscular fibers are shorter and its connective tissues less elastic, therefore it is more easily

digested than beef. The fat of mutton is very hard, owing to the great amount of substance called stearin which it contains. Since stronger heat is required to melt it than for other fats, mutton fat is hard to digest. The different cuts of mutton are cooked as the different beef cuts, but owing to its strong flavor, mint sauce is usually served with the roasts.

Lamb is the immature meat of sheep and, since it contains more fat, is less digestible, but when properly cooked has, for some, a very fine flavor. Since it is lacking in protein but rich in fats, it is usually served with a protein vegetable such as peas.

FISH

The word fish as ordinarily used, means any water animal, as oysters, cod, salmon, etc. Fish is classified as:

White fish, whose oil or fat is stored in the liver and not through the flesh; as white fish, cod, perch, red snapper, etc.

Red fish, whose oil or fat is distributed through and around the flesh; as salmon, trout, herring, etc.

Shell fish, whose bodies have a hard shell-like covering to protect the soft flesh; as oysters, lobsters, shrimps, crabs, etc.

The meat of the white fish is more easily di-

gested than that of the red fish and should therefore be selected as a food by people of weak digestion or by invalids.

As a food, the three are generally composed of:

	Water	Protein	Fat	Minerals
White Fish	85%	12½%	½%	2%
Red Fish	64%	20 %	14%	2%
Shell Fish	84%	12 %	3%	1%

The connective tissue is a substance which softens very easily, and the meat fibers are very short, so that the cooking of fish should be at a moderate temperature and for a short time.

When selecting fish that has been shipped care must be taken that the eyes are full, the gills red and flesh firm.

BAKED WHITE FISH—FRESH POTATO BALLS

Use a fish that weighs from 2½ to 4 lbs. Clean and wipe fish with damp cloth. Rub the inside with salt, brush outside with melted butter, sprinkle with salt and pepper, dredge with flour, tie and bake in a dripping pan or skillet in moderate oven until flesh is firm and separates easily from the bone. Baste during baking with melted butter and hot water. When brown slip onto a hot platter, garnish with parsley and thin slices of lemon. This should bake from 30 to 45 minutes.

POTATO BALLS

Cut small potato balls from raw potatoes and fry in deep fat until well browned and tender. Salt and pile on platter around fish.

CREAMED CODFISH

(Serve 2)

1/3 c. white sauce "2 to 1"	1/4 egg
1 tbsp. shredded codfish	dash nutmeg
1/4 tsp. lemon juice	1 tbsp. buttered crumbs

Mix white sauce and codfish in baking dish. Stir in beaten egg. Add lemon juice, nutmeg and crumbs to the top. Bake 20 minutes in moderate oven.

The codfish is a large white fish of the north-eastern Atlantic. Those caught on the New England coast are eaten extensively by the people of that locality. Large canneries are located there which ship our fish to us.

SALMON CROQUETTES

(4 croquettes)

1/4 c. shredded red salmon	dash salt
1/4 c. white sauce "4 to 1"	6 drops lemon juice

Mix lemon juice and salt with the salmon and add to the white sauce. Cool. When cold mold into small cylinders, roll in crumbs, in beaten egg, in crumbs again and let stand until the egg has dried. Drop in deep fat and cook until a golden

brown. Drain on cloth or soft paper and serve garnished with parsley.

To test hot fat. When a crumb of bread will brown in 40 counts the fat is hot enough.

In preparing the eggs for croquettes, add 3 tbsp. of water for each good sized egg and beat all together until well mixed. One egg will roll from 8 to 10 croquettes, depending upon the size.

The salmon is a red-fleshed fish. The most extensive fisheries of this country are on the north-western coast and especially in the Columbia river. The older fishes live in the sea, but ascend some large fresh water river which empties into the ocean to deposit their eggs in the fresh water. The young fish sometimes stay in the fresh water two years.

In buying salmon, always select the reddish flesh. Pink or white salmon is very inferior.

1. What is the difference in composition between the cod and salmon?

2. Which is easier to digest? Why?

3. What foods are best to serve with fish?

4. Why do fish courses usually contain potatoes and bread?

Why use lemon juice with fish?

SCALLOPED SALMON

(Serve 6)

1 lb. can red salmon	c. milk
2 c. cracker crumbs	1 tsp. salt
1 tsp. lemon juice	

In a baking dish make alternate layers of the salmon and the crumbs, beginning and finishing with the crumbs. Shake over the salt, add the lemon juice by drops and then the milk. Bake in a moderate oven 30 minutes.

OYSTERS

Oysters, under the best conditions are very easy to digest though in proportion to their weight and usual cost they have not high nutritive value compared with other foods.

They supply the most food value, when eaten raw, as cooking hardens and contracts them, but if cooked very lightly they are more appetizing to some people.

Inland towns do not get oysters at their best and great care must be taken in selecting and preparing those that have been sealed and shipped. It is not advisable to use the liquor that comes with the oysters that have been packed in large kegs. Each oyster should be carefully washed and run through the fingers to remove shells.

OYSTER SOUP

$\frac{1}{2}$ c. oysters (selected and washed)	1 c. milk
$\frac{1}{4}$ tsp. salt	1 tsp. butter

Put milk and butter in double boiler and, when scalding hot, add the oysters and salt and heat

until the gills of the oyster begin to curl. Remove from the fire and serve. A dash of nutmeg over the top improves the flavor for some persons.

CREAMED OYSTERS

$\frac{1}{4}$ c. oysters (selected and washed)
1 c. white sauce "2 to 1"

Add oysters to hot white sauce and when the gills begin to curl, pour over toast and serve. The juice of $\frac{1}{4}$ small lemon, squeezed over the top, improves the flavor.

SCALLOPED OYSTERS

(Serve 6)

1 pt. oysters	1 tbsp. butter
2 c. cracker crumbs	1 c. milk
1 tsp. salt	dash cayenne

After oysters have been prepared, arrange in a baking dish alternate layers of crumbs and oysters, beginning and finishing with the crumbs, and over each layer of oysters dot pieces of the butter and some of the salt. Add the milk and bake in a moderate oven 20 minutes.

CREAMED SHRIMP

(Serve 8)

1 can dry shrimps 2 c. white sauce "2 to 1"
diced whites of 2 hard-cooked eggs

Pick the shrimps into small pieces, removing all hard particles. Add the shrimps and egg white to the white sauce and serve on toast.

CHAPTER VII

CHEESE

Cheese is believed to be the first form in which milk was preserved for future use.

From the standpoint of the housekeeper cheese is of importance; first, because of its high nutritive value in muscle-forming material; second, because of the great number of foods with which it may be served in combination; and third, because of its use as a flavoring. The general composition of cheese is as follows:

Water	Protein	Fats	Milk Sugar	Mineral
34%	25%	34%	3%	4%

Cheese is made from whole milk, skimmed milk, or cream. In some foreign countries goat's milk is used entirely, but American cheese is made from cow's milk. Rennet, a kind of acid, is added to the milk which causes it to curdle; that is, the casein is separated from the water, which is called whey. The whole is heated to a degree of 100 F. The whey is drained off and the curd salted and put into a press for a day. Then the cheese is kept several weeks to "ripen"; that is, develop flavor,

which it does by the growth of bacteria. The average cheese when fresh, contains about $\frac{1}{4}$ its weight in protein, $\frac{1}{3}$ fat, $\frac{1}{3}$ water and $\frac{1}{12}$ mineral and carbohydrates. Owing to the addition of salt the percentage of mineral matter is high. There is always present a small amount of albumen and milk sugar which clings to the curd. This is the cheese we ordinarily buy for our home use. Numbers of foreign makes are sold in this country which we shall study later.

Digestibility of cheese. Cheese has, heretofore, been considered the cause of digestive disturbances, but recent experiments have shown that this is not a fact. There are persons with whom eggs or milk do not agree. The same principle applies to cheese in the average diet. The fatty acid which cheese contains in small amounts causes trouble in some stomachs just as do doughnuts, pork or fats of any kind. The compactness of cheese, when eaten alone, renders it hard for the digestive fluids to liquify. However, it does not remain longer in the healthy stomach than some kinds of meat.

Why cheese is served with pie. When cheese enters the stomach an excess of juice is called forth to digest it, and as pastry is also hard to digest, the extra juice more easily disposes of the pastry. Why pastry is hard to digest will be studied later.

CHEESE BALLS

(To be served with a salad)

1 egg white	1 c. grated cheese
1 tsp. salt and cayenne	

Beat egg white, mix with it the cheese and seasoning. Mold in small balls and roll in cracker crumbs. Place on the ice about 30 minutes to dry the egg on the outside. Drop in deep fat and fry a golden brown.

WELSH RAREBIT I

$\frac{1}{2}$ c. white sauce "2 to 1"	$\frac{1}{4}$ tsp. salt
2 tbsp. grated cheese	speck cayenne

Make white sauce in double boiler. Add cheese and seasonings and, when cheese has melted, serve on wafers or toast.

This is the least expensive rarebit that can be made.

WELSH RAREBIT II

(Serve 6)

1 c. diced fresh cheese	1 tbsp. butter
1 c. milk	1 egg
$\frac{1}{4}$ tsp. salt	dash cayenne

Melt butter in a pan over water, add milk, then cheese and cayenne. When melted, add egg which has been thoroughly mixed, and cook one minute. Serve on wafers. Tomato juice may be used instead of milk.

CHEESE SANDWICHES

(15 sandwiches)

2 c. grated cheese ($\frac{1}{2}$ lb.)	$\frac{1}{2}$ tsp. salt
$\frac{1}{4}$ c. mayonnaise	1 large pimento
$\frac{1}{2}$ tsp. paprika	$\frac{1}{4}$ c. chopped nuts

Cut pimento very fine. Blend cheese, mayonnaise, salt, paprika, nuts (if used) and pimentos. Spread as in other sandwiches.

Estimate the cost.

Thin slices of tomato, hard cooked egg or cucumber, in these sandwiches, adds much to their taste.

COTTAGE CHEESE

Heat one gallon firm clabber very slightly or until the whey is separated from the curd. Drain the whey off by pouring the heated mixture in a cloth sack and hanging it where it can drip for an hour or so or until the curd is dry. Season with salt, pepper and cream, either plain or whipped. This may be used for salads, in pie, or in place of a vegetable.

CHAPTER VIII

CEREALS

Cereals are manufactured from the seeds or grains of the various members of the grass family. The grains most used are wheat, oats, corn, rice, rye and barley; and from these are prepared the numerous brands of breakfast foods which flood the markets.

Oatmeal, the oat grain, is ground into small particles and is used mostly for porridge and gruel.

Rolled oats, the grains are moistened and run between hot steam rollers, which flattens each grain and partially cooks the starch. For this reason oatmeal should be steamed from 5 to 6 hours, while rolled oats will cook sufficiently in from 30 to 45 minutes. For a well-balanced cereal, rolled oats, when properly cooked, furnishes the most nutriment.

Most cereals contain a large amount of starch. Oats, corn, and wheat contain, also, a large amount of vegetable protein, and are very rich in fats and minerals.

Compare the foods from the following table:

	Protein	Carbo- hydrates	Fats	Minerals	Water
Oats	12%	66%	7 %	3 %	12%
Wheat ...	12%	71%	3 %	2 %	12%
Corn	10%	70%	4 %	2 %	14%
Rice	7%	78%	½%	1½%	13%

Since cereals contain such a high percentage of starch and so little water, they must be cooked a long time in a large amount of water.

TABLE FOR COOKING CEREALS

Cereal	Amount	Water	Salt	Method of Cooking	Time
Oatmeal	1 c.	4 c.	1 tsp.	steamed	6 hrs.
Rolled Oats...	1 c.	2 c.	1 tsp.	steamed	40 min.
Cm. of Wheat	1 c.	4 c.	1 tsp.	steamed	40 min.
Cornmeal	1 c.	6 c.	1 tsp.	boiled	40 min.
Rice	1 c.	10 c.	1 tsp.	boiled	20 min.
Rolled Oats...	1 c.	4 c.	1 tsp.	boiled	25 min.

General directions for cooking cereals. Add the salt to the boiling water, and add the cereal to the water, stirring continually. If it is to be steamed, cook it over direct heat for 5 minutes, then over water the required length of time. If it is to be boiled, cook over direct heat the required length of time. Cornmeal mush must be stirred continually the entire time of cooking. Rice must have a sufficient amount of water, that, as it boils, the grains may be kept apart.

When cooking small amounts the evaporation will be greater and more water may have to be added to obtain the desired results.

Digestion of cereals depends upon their being properly cooked or prepared. Some are so prepared before they are sent to the market that a large amount of their starch has been turned to dextrine (one of the functions of digestion) and they are advertised as "pre-digested" foods.

CREAM OF WHEAT WITH DATES

(Serve 4)

$\frac{1}{2}$ c. cream wheat	$\frac{1}{2}$ tsp. salt
2 c. boiling water	4 chopped dates

Cook as directed in table. Add dates the last 10 minutes.

Since dates contain a large percentage of sugar, the combination with cream gives us a well-balanced food. Raisins may be used in place of the dates with the same results.

What will it cost per person to serve Cream of Wheat with milk?

CORNMEAL MUSH

(Serve 4)

1 c. meal	6 c. water
1 tsp. salt	

Cook as directed in table. Rinse a square or oblong granite pan with cold water, turn mush

into it, let stand until cold. Remove from pan, slice in $\frac{1}{2}$ inch slices, dredge with flour, sauté in bacon drippings, and serve crisp or with a syrup. If served crisp, grated cheese may be sprinkled over the top.

1. What is the cost per pound?
2. Why should we eat a great deal of food prepared from cornmeal?
3. What additional food element does it give to serve it with syrup?
4. What food element is added when cheese is used?
5. Suggest other combinations that add to its value.

RICE WITH CHEESE SAUCE

(Serve 4)

$\frac{1}{4}$ c. dry rice $\frac{1}{2}$ tsp. salt
4 c. boiling water

Wash rice until the last water is clear. A good way is to put rice in a strainer and hold under a faucet until the water runs through clear. Cook as directed in the table, and when tender, drain. Pour over it the cheese sauce and serve immediately or place in a hot oven and brown slightly, with buttered crumbs added to the top.

CHEESE SAUCE

1 c. white sauce "2 to 1" 2 tbsp. grated cheese

Add the cheese to the hot white sauce and let stand until cheese is melted. A dash of cayenne may improve the flavor for some.

1. Why wash rice so thoroughly?
2. What does rice lack as a food that the cheese and white sauce supply?
3. Rice is rarely served alone, but usually in combination with eggs, milk, meat, etc. Why this combination?
4. Where does rice grow? How is it harvested? What is the cost per pound?

BAKED RICE

(Serve 4)

 $\frac{1}{2}$ c. rice

1 tbsp. sugar

 $1\frac{1}{2}$ qts. of milk

Wash rice in one water. Mix with the milk and sugar and bake *slowly* for 3 hours. Cinnamon may be sprinkled over the top. Rice is washed in one water only so as not to lose the starch that will thicken the milk.

ROLLED OATS—APPLE SAUCE

(Serve 4)

 $\frac{1}{2}$ c. rolled oats

1 c. water

 $\frac{1}{2}$ tsp. salt

Cook as directed in table. Pile on top of each dish of rolled oats 2 tbsp. apple sauce, and serve with sugar and cream.

A pound of rolled oats costs 5 cents and will serve 16 liberal portions.

As the food elements are so well balanced in this cereal it makes a very economical, wholesome food.

1. What would it cost per service with milk and sugar?

2. Why is apple sauce a logical combination with the oats?

HOMINY GRITS

(Serve 4)

1 c. hominy grits	1 tsp. salt
3 c. boiling water	

Cook as directed for all cereals.

Serve with cream and sugar. Or cook very stiff and serve with maple syrup.

MACARONI

Macaroni is not, in a true sense, one of the cereals, but as it is manufactured from flour we study it along with the cereals.

Macaroni is manufactured from a paste made of hard wheat flour and water molded in slender tubes. Spaghetti and vermicelli are different forms of the same paste. It was first manufactured in Italy, and it is one of the principal food-stuffs of that country. The best is made from a fine grade of hard wheat which is very rich in a protein, called gluten, but is poor in water and fat. To obtain the best results, it should be cooked in plenty of water and seasoned well or combined with other foods such as fats, milk, butter, cheese, eggs, or meat stocks.

MACARONI AU GRATIN

(Serve 4)

- | | |
|----------------------------|----------------------|
| 1 c. macaroni (broken) | 1 tsp. salt |
| 4 c. boiling water | 1/3 c. grated cheese |
| 1½ c. white sauce "2 to 1" | |

Drop macaroni in the boiling salt water and cook until tender (about 20 minutes). Drain. To the white sauce add the grated cheese and, when the cheese has melted, pour over the macaroni. Put into a baking dish, cover with buttered crumbs and brown in a hot oven.

When macaroni is to be served with roast beef, as is usually done, a tomato sauce instead of the cheese sauce adds to the general taste of the course. *Why?*

1. What is the meaning of "au gratin"?
2. Why not serve beef and cheese together?
3. What is the cost of macaroni per pound?
4. What is the cost per person with cheese?

MACARONI WITH TOMATO SAUCE

(Serve 4)

- | | |
|--------------------|-------------|
| 1 c. macaroni | 1 tsp. salt |
| 4 c. boiling water | |

Cook as macaroni au gratin. Turn over it the tomato sauce, put in a baking dish, sprinkle buttered crumbs over the top and brown in the oven.

TOMATO SAUCE

- | | |
|----------------------------|----------------|
| 1 c. strained tomato juice | 2 tbsp. butter |
| 2 tbsp. flour | ¼ tsp. salt |
- Make as white sauce.

CHAPTER IX

FLOUR

Flour is made by grinding the grains of various cereals into a powder, as rice flour from rice, rye flour from rye, white flour from wheat. Some cereals are ground or broken into fine particles called *meal*, and thus we have, cornmeal, oatmeal, barleymeal, etc. Since we deal principally with the white flour, the term flour to us always means that made from wheat.

Two kinds of wheat are used in making flour; namely, hard wheat and soft wheat.

Hard wheat is so called on account of the high percentage of protein, called gluten, which it contains. It is planted in the spring and is harvested in the late summer. While it may be grown in the south as well as the north, the northern states seem to excel in this special wheat. The flour from this wheat is called "bread flour" and is used especially for making bread mixtures. The gluten has a peculiar elastic quality, which makes it especially desirable in mixtures which are to have body or be without crumb.

Soft wheat has very little gluten in it, but a

Read in a text on agriculture, "Wheat" and Farm Bulletin No. 389.

high percentage of starch. The wheat for this flour is planted in the fall, grows all winter and is harvested in the early summer. The flour from this wheat is called "pastry flour" and it is recommended for mixtures which are to be *crumbly* or *short*, as cakes or pastry.

Whole wheat flour is made by grinding the whole grain of the wheat into a powder.

Graham flour is made by separating the brown skin of the wheat kernel from the inner portion, grinding each separately and then combining. This is so often adulterated by the use of inferior brans that its use is not recommended when whole wheat flour can be purchased.

Test for gluten. Take $\frac{1}{4}$ c. bread flour and moisten it with enough cold water to make stiff dough. Let stand 15 minutes. Work this dough with the hands until it becomes smooth and elastic, then wash it under cold water until it gives out no more starch. Bake in a very hot oven. Its peculiar structure and quality may be plainly observed. This elastic property renders it unfit for a dough or batter which is to be kept short and crummy in texture; as cakes, pastry, etc.

DOUGHS AND BATTERS

When we mix a liquid and some starchy material together, we call it either a dough or a batter, according to the degree of stiffness. Those that

we are able to handle and shape, are called doughs. Those that must be stirred or mixed with a spoon until the cooking is begun, are called batters. Flour and meal are the starchy materials most used. Milk and water are the liquids.

Just flour and water mixed together with a little salt would be a very compact substance, hard to digest, so it is necessary to imprison air in these doughs and batters to make them "light" or less compact.

The substances used to "lighten" these mixtures are baking powder, soda and an acid, air inclosed in beaten egg white, or yeast. In nature there are two opposing elements, *acids* and *alkali*. When brought together in the presence of moisture the stronger overcomes the weaker and a *gas* is formed. This gas formation expands and grows when subjected to heat. The gas, when entangled with the batter and forced to expand, pushes the dough upward in the pan. The tiny holes we see in doughs and batters are the cells where the gas bubbles were formed.

The *acids* most used in cooking are cream of tartar, sour milk, sorghum molasses. The *alkali* used is soda.

Good baking powder is composed of one part of soda to two parts of cream of tartar, with a small amount of starch added as a filler or to absorb moisture.

These definite statements should be thoroughly understood; acid plus alkali plus moisture forms a gas; when heat is applied the gas expands.

When baking powder is used. Dry acid (cream of tartar) plus dry alkali (soda) plus moisture (milk or water) forms a gas. The heat of the oven causes the gas to expand and the composition is light.

When soda is used. Moist acid (sour milk or molasses) plus dry alkali (soda) forms a gas.

Cream of tartar is made by drying and grinding the scum which collects on the top and around the sides of vats where grape juice is being boiled. This dried purple scum is bleached, refined and powdered, and is our commercial cream of tartar.

Soda or sodium carbonate is a salt of strong alkaline taste. It is formed in nature, as in soda lakes, etc.; but for the most part is made artificially, as by the burning of sea plants, etc.

TESTS

1. Add 2 tbsp. cold water to 1 tsp. B. P.
2. Add 2 tbsp. boiling water to 1 tsp. B. P.

Which foams the more? What does that explain?

What are in these bubbles?

3. Add 2 tbsp. cold water to $\frac{1}{2}$ tsp. soda.
4. Add 2 tbsp. vinegar to $\frac{1}{2}$ tsp. soda.

Which foams the more? What does that explain?

5. Mix $\frac{1}{2}$ tsp. soda and 1 tsp. cream of tartar.

What happens? Now add 2 tbsps. cold water and heat. What happens?

Albumen or egg white is very elastic and holds the air in small sacks which form during the process of whipping. When flour is mixed with the beaten egg, the dough or batter is filled with air bubbles.

A soft dough. Starchy material with sufficient liquid to make it thick enough to handle, makes a soft dough. Since the kinds of flour differ so widely in the amount of water they will absorb, it is never wise to use a given amount, but first, know your batter or dough, then add the liquid to the dry materials until the desired consistency is obtained. In the use of shortenings, if a compound is used, measure out $\frac{1}{3}$ less, than if butter or lard is to be used. Compounds are concentrated, while butter and lard have water in them. In these recipes, unless stated differently, compounds are used as a matter of economy.

BAKING POWDER BISCUITS

(9 small biscuits)

1 c. pastry flour	$\frac{1}{4}$ tsp. salt
2 tsp. baking powder	2 tbsps. firm shortening
liquid to make soft dough	

Sift dry ingredients together. Chop in fat. When mealy-like add liquid. Handle and stir as little as possible. When all of the dry material is moistened, turn on a floured board, pat into shape, cut and bake in hot oven.

Be sure that you *chop* in your shortening. If blended or mashed the dough will be soggy and oily. When oil is used add it after the liquid.

Save out a portion of the dough and work it with the hands, then bake it. Note the difference in structure.

Is there any difference between the textures of the biscuits that were baked without handling and those baked after kneading?

A well-made and properly baked biscuit will rise evenly all around with layers of crumb between the top and bottom crust. A poorly made and baked biscuit will rise in the center and the outer edges will still touch the bottom crust.

SODA BISCUITS

(8 small biscuits)

1 c. flour	$\frac{1}{4}$ tsp. salt
$\frac{1}{4}$ tsp. soda	2 tbsp. fat
sour milk to make soft dough	

Sift flour, soda and salt together. Chop in fat. Add the liquid and make as B. P. biscuits.

The amount of soda required depends upon the sourness of the milk, usually it is $\frac{1}{2}$ tsp. to 2 c. of flour, or 1 c. of butter-milk, in a soft dough.

There is a story told in the south, that at one time milk was very scarce and the women made griddle cakes and biscuits with orange juice. Could such a thing be possible?

QUICK CINNAMON ROLLS

(3 rolls)

$\frac{1}{4}$ c. flour	$\frac{1}{2}$ tsp. baking powder
1 tsp. shortening	$\frac{1}{16}$ tsp. salt
liquid to make soft dough	

Mix as for B. P. biscuits. Roll 1 inch thick, spread with a thin layer of butter, sift over 1 tsp. brown sugar and $\frac{1}{4}$ tsp. cinnamon. Roll as for a jelly-roll cake, cut in three pieces and bake with scroll side up, in a moderate oven for 15 minutes. Raisins may be dotted over the surface when the sugar is sifted on.

DUMPLINGS

(8 dumplings)

1 c. flour	1 tsp. salt
2 tsp. B. P.	liquid to make soft dough

Sift dry ingredients, add liquid to make soft dough, leaving it moist. Scrape from a spoon. Have boiling the liquor in which a piece of meat has been cooked. Drop in the dough, a spoonful at a time. Cover closely and boil the broth, without lifting the lid for 12 minutes. Serve.

1. How do dumplings differ from biscuits?
2. Why do we use no shortening?

SHORT CAKES.

Make as for baking power biscuits, using twice the amount of shortening, rolling and cutting a larger size. Open, fill and cover the top with crushed strawberries, peaches or any fruit. Serve with whipped cream.

Stiff doughs. A mixture of a starchy material and enough liquid to moisten, allowing ease in handling, is classed as a stiff dough. Usually they require from 6 to 8 times as much dry material as liquid. This amount depends upon the proportion of egg and fat in the mixture.

SUGAR COOKIES

(A gallon crock full)

1 c. butter	2 tsp. B. P.
1 egg	1 c. sugar
3 c. flour	milk to make stiff dough (about $\frac{1}{4}$ c.)

Mix as butter cakes. When stiff, turn onto well-floured board and roll out a part at a time to a very thin sheet. Cut, sprinkle with nutmeg and sugar and bake in moderate oven. Keep pan and board well floured.

INDIVIDUAL RECIPE FOR SUGAR COOKIES

2 tbsp. butter	$\frac{1}{4}$ tsp. B. P.
6 tbsp. flour	1 tsp. egg
2 tbsp. sugar	liquid to make stiff dough (about 1 tsp. milk)

Mix butter cakes by creaming the butter and the sugar, adding the egg, the flour, the B. P. and liquid.

DOUGHNUTS

(12 cakes)

1½ c. flour 1/16 tsp. each nutmeg, mace, cinnamon
 ½ tsp. salt 6 tbsp. sugar
 3 tsp. B. P. 2 tsp. shortening
 ½ egg

liquid to make stiff dough (about 3 tbsp. milk)

Sift dry ingredients, chop in fat, add egg and liquid, a little at a time, until the right consistency for a stiff dough.

Roll ¼ in. thick, cut and fry in deep fat. Roll in sugar while hot. For individual recipe use ¼ of these quantities.

If doughnuts fall to pieces in the grease it is not hot enough, or too much shortening has been used. These were originally called Fried Cakes and those made from bread-dough, Doughnuts, but now we call both Doughnuts.

OATMEAL COOKIES

(10 cookies)

1 egg	2/3 c. flour
1/4 tsp. soda	1/3 c. butter
2/3 c. rolled oats	1/3 tsp. cinnamon
1/3 c. sugar	1 scant tbsp. water
1/3 c. raisins	1/3 c. chopped nuts

Sift flour, soda, cinnamon and sugar; add oatmeal, butter, egg, raisins, water, nuts, and mix thoroughly. Drop these from a tsp. onto a dry pan and bake in hot oven from 13 to 15 minutes. These are better if allowed to stand in a stone jar several days before serving. Why?

Drop batters. When a mixture of starchy material and liquid will drop from a spoon, yet retain something of its shape, it is a drop batter. Usually it is given as 2 measures of flour to 1 of liquid. Eggs and fat count as liquid.

MUFFINS

(12 muffins)

2 c. flour	4 tbsp. shortening
$\frac{1}{2}$ tsp. salt	4 tsp. B. P.
6 tbsp. sugar	2 eggs
liquid to make drop batter (about $\frac{2}{3}$ c.)	

Sift dry ingredients. Chop in fat. Drop in whole egg and a little of the liquid. Mix, adding a little liquid at a time until it is the right consistency. Do not stir more than is necessary to mix well. Bake in hot oven. If a sweeter muffin is desired from 1 to 2 tbsp. more sugar may be added.

1. Notice the similarity of this batter to biscuit dough.
2. What are the differences?

How eggs leaven. In beating the white of eggs, we enclose air in small bubbles, these bubbles then become distributed through the dough when mixed in with it. In baking, the heat expands the air and also makes the walls of the air bubbles firm, so that a porous or sponge-like structure is retained. Before hardened by heat, these cell walls are very easily broken down, for that reason we fold in beaten egg white instead of beating it in. This gives a fine spongy texture.

TEA CAKES

(12 cakes)

2 c. flour	$\frac{3}{4}$ c. sugar
2 eggs	4 tsp. B. P.
6 tbsp. shortening	$\frac{1}{2}$ tsp. vanilla
$\frac{1}{2}$ tsp. salt	$\frac{1}{4}$ c. currants (cooked, dried and floured)
liquid to make drop batter	

Sift dry ingredients together, chop in shortening, add eggs and a small amount of liquid at a time, until consistency desired is obtained. Add floured fruit and flavoring and bake in muffin tins in a moderate oven. Stir only enough to mix well.

1. Work out the cost of these cakes.
2. Compare with the same amount purchased at a bakeshop.
3. What is the principal food element in these cakes?
4. How do they differ from muffins? From biscuits?

GRAHAM GEMS

(16 gems)

2 c. graham flour	$\frac{1}{2}$ tsp. soda
3 tbsp. shortening	4 tsp. B. P.
1 tbsp. sugar	$\frac{1}{2}$ tsp. salt
4 tbsp. molasses	Sweet milk or water to make drop batter

Sift dry ingredients and turn the bran back with them. Chop in shortening and add molasses and liquid, a little at a time, until the desired consistency is obtained. Bake in a moderate oven.

1. Why use soda and B. P. both?

FRITTERS

(4 fritters)

$\frac{1}{2}$ c. flour	$1\frac{1}{2}$ tbsp. sugar
$\frac{1}{2}$ egg	1 tsp. B. P.
$\frac{1}{8}$ tsp. salt	liquid to make drop batter (about 3 tbsp.)

Sift dry ingredients. Add egg and liquid a little at a time. Beat thoroughly. Mix with it 4 tbsp. of corn, or cut banana or any fruit. Drop by tablespoonfuls in hot fat and fry until golden brown.

CREAM PUFFS

(8 small puffs)

$\frac{1}{2}$ c. flour	$\frac{1}{4}$ c. butter
2 eggs	$\frac{1}{2}$ c. boiling water

Add butter to water and when boiling, add flour all at once and stir vigorously. Remove from the

fire, cool and add unbeaten eggs one at a time, beating until thoroughly mixed before adding the next egg. Drop by spoonfuls on a buttered sheet, about 2 inches apart, shape as nearly round as possible, and slightly higher in the center. Bake 30 minutes in a moderate oven. If not thoroughly cooked they will fall. With a sharp knife open one side and fill with cream filling.

No baking powder or soda is used. What acts as a leaven?

CREAM FILLING

6 tbsp. sugar	$\frac{1}{4}$ tsp. salt
3 tbsp. flour	1 egg
1 c. scalded milk	$\frac{1}{4}$ tsp. lemon extract

Mix flour, salt and sugar, add egg slightly beaten and pour over gradually the scalded milk. Cook 15 minutes in a double boiler, stirring constantly until thick, afterwards occasionally. Cool and flavor.

This filling may be used for any of the cream pie fillings and will fill one small pie shell.

Whipped cream, sweetened and flavored with vanilla may also be used.

CORN MEAL MUFFINS

(6 muffins)

1 c. corn meal	1 tbsp. shortening
2 tsp. B. P.	$\frac{1}{2}$ tsp. salt
1 egg	sweet milk

Sift meal and salt in a bowl. Add the butter and pour over this $\frac{3}{4}$ c. boiling water, and beat until cold. Break into it the egg and add the milk a little at a time until a drop-batter consistency is obtained. Dissolve the baking powder in the last tbsp. of milk used, mix it thoroughly with the batter and bake immediately. It will require from 15 to 20 minutes in a hot oven.

SOFT GINGER BREAD

(1 loaf)

$2\frac{1}{4}$ c. flour	$\frac{1}{2}$ tsp. soda
$\frac{1}{2}$ c. molasses	1 egg
1 tsp. ginger	$\frac{1}{2}$ c. sugar
$\frac{1}{4}$ c. nuts	4 tbsp. shortening
$\frac{1}{4}$ tsp. salt	hot water (about $\frac{1}{2}$ c.)

Sift flour, ginger, soda and sugar together. Chop in shortening. Stir in molasses, egg and nuts and enough hot water to make drop batter. Bake as soon as mixed, as the gas will form, expand and escape very rapidly. All mixtures containing a high percentage of fat or sugar must bake at a moderate or low temperature.

Pour batters. When a mixture of starchy material and liquid will pour from one vessel to another it is called a pour batter. Usually it is equal parts of liquid and of flour, butter and eggs counting as liquid in a proportionate way. There are two classes of pour batter; that is, thick pour and

thin pour. We will note the difference as we make the different mixtures.

TIMBAL CASES

(40 cases)

1½ c. flour	2 tbsp. sugar
2 eggs	1 tbsp. olive oil
1 tsp. salt	1 c. milk

Sift dry ingredients together, add whole eggs and a little milk at a time, beating continually. When well mixed, beat in the oil.

If the timbals are not crisp when baked the batter is too thick.

If the timbals do not stick to the iron while cooking, the iron is too hot.

If the timbals stick to the iron so that they cannot be removed, the iron is too cold.

Timbals are used as cases for serving creamed foods, as creamed peas, chicken, beef, etc.

Timbals belong to the class of thin pour batters.

GRIDDLE CAKES

2 c. flour	4 tsp. B. P.
1 tsp. sugar	½ tsp. salt
1 egg	1 tbsp. shortening
liquid to make pour batter (about 2 c. milk)	

Sift flour, sugar, salt and B. P. together. Chop in shortening. Add egg and milk and beat until thoroughly mixed. Stir the batter each time be-

fore pouring a fresh batch of cakes on the griddle. Bake by tablespoonfuls. When the cakes are full of bubbles on the top and brown on the under side, turn with a broad knife or turner. If large bubbles rise at once at top of cakes, the griddle is too hot. If the top stiffens before the under side is brown, the griddle is not hot enough. Never turn a cake twice.

Put the griddle on the stove where it will be hot by the time batter is made.

BREAD GRIDDLE CAKES

$\frac{1}{2}$ c. bread crumbs	$\frac{1}{16}$ tsp. salt
$\frac{1}{4}$ tbsp. butter	$\frac{1}{4}$ c. flour
$\frac{1}{2}$ egg	$\frac{1}{2}$ tsp. B. P.
$\frac{1}{4}$ c. milk	

Sift the dry ingredients. Mix the egg and stir it in the milk. Pour the egg and milk over the bread crumbs and when they are soft stir in the dry ingredients and the melted butter.

WAFFLES

(6 waffles)

2 c. flour	2 tbsp. sugar
3 eggs	1 tsp. B. P.
4 tbsp. butter	$\frac{1}{2}$ tsp. salt.
liquid to make pour batter, about $1 \frac{1}{3}$ c.	

Sift flour, B. P., salt and sugar. Beat egg yolks until lemon colored. Add to the dry ingredients together with a little of the milk at a time. Melt

the butter and beat in. Lastly fold in whites, which have been beaten stiff and dry. (The batter should be a very little thicker than a griddle cake batter.)

Have both sides of the waffle iron hot and well-oiled. Put 1 tbsp. of batter on each compartment, spread out and let top down. When brown on under side turn the iron.

If well made and baked the waffle will be crisp and tender.

Estimate the cost of these waffles.

SOUTHERN WAFFLES

(These are less expensive and very good)

2 c. flour	1 tbsp. sugar
$\frac{1}{2}$ tsp. salt	1 egg
3 tbsp. cornmeal	4 tsp. B. P.
2 tbsp. butter	liquid (about $1\frac{1}{2}$ c.)

Sift flour, cornmeal, B. P., sugar and salt together. Add egg and a portion of the liquid. Mix thoroughly. Add melted butter and mix again. Add enough more milk to make desired consistency.

1. What effect does the cornmeal have upon the batter?
2. Estimate the cost of these waffles.

CHAPTER X

BEVERAGES

Beverages are liquids used as drinks to quench the thirst, as stimulants, and in a small way to supply the body with food.

Water, when pure and fresh, is nature's remedy for thirst, and from three to four pints per day is needed to keep the body in a healthful condition.

Many acids and flavors are added to water to increase its popularity as a thirst quencher, but in so doing the benefit of the drink is often lost by the injurious effects of the concoctions put into it. The evil effects of some of the "soda fountain" drinks upon the nervous system cannot be overestimated; and when a person feels that he cannot do his work without a certain number of these drinks per day, it is time to give them up altogether, as the stimulation is only artificial and is wrecking the nervous system.

Tea and coffee contain an acid called *tannin*, which, if extracted in any considerable degree, has an injurious effect upon the digestive system by

NOTE: Read in connection "Disease Germs in Water" in your Physiology.

retarding the flow of the saliva and gastric juice. They also contain an alkaloid called *theine* or *caffeine* (the same elements) which has a stimulating effect upon the nerves.

Tea or coffee may be made in such a way that but very little of the tannin acid will be extracted, and to the improper making we attribute a large percentage of their injurious effects.

Cocoa is made from the bean or seed of a native tree of the tropical countries of America. In the factories these beans are cracked into irregular bits known as cocoa nibs. These nibs contain so much fat that when they are ground, instead of becoming a powder, they form a paste, giving us our commercial *Chocolate*. In some cases a large amount of this oil is extracted before the grinding and then the powder is called cocoa. The oil is called *cocoa-butter*.

Cocoa contains an element called *theobromine*, similar to caffeine or theine, though much less stimulating in its effects.

Cocoa is composed of:

Water	Fats	Starch	Nitrogen	Minerals	Theobromine
4%	50%	14%	26%	4%	2%

As you notice, cocoa contains a large amount of fat and starch and ranks as a high-class foodstuff. However, the presence of so much fat means that it is too rich for some people, though others can

digest it with no difficulty. The food value depends to a large extent upon the manner in which it is prepared. The milk and sugar adds to its nutriment.

COCOA

(1 quart)

1 pt. boiling water	6 tbsp. cocoa
1 pt. scalded milk	8 tbsp. sugar

Mix the cocoa and sugar in a sauce pan; add the water and let it boil 5 minutes, or until it is smooth and free from any raw taste. Scald the milk in a double boiler and just before serving, add to the cocoa and beat well with a Dover beater. Do not allow the cocoa to boil after the milk has been added. Using the egg beater will prevent albuminous skin from forming. The amount of cocoa used will depend upon the brand. Some contain more sugar and oil than others.

TEA

(One cup)

1 tsp. tea	1 c. fresh boiling water
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Place tea in a hot scalded vessel which may be covered. Pour over it the boiling water and let stand covered 2 minutes, stirring with a spoon once. Pour the tea from the grounds into an eathern vessel that has been scalded. Serve.

A thin slice of lemon, a clove, a strawberry or a few drops of lime juice may be added to each cup to improve the flavor.

Tea is made by *infusion* and not by boiling. The mistake of boiling tea is often made by inexperienced housekeepers. Pouring the tea from the grounds after 2 minutes prevents a very great amount of tannic acid from forming. Tea is the leaves of a small bush, a native of China, Japan, Ceylon and India. The best tea is made from the young leaves and buds from the top of the bush and is called Orange Pekoe. If the leaves are dried as soon as picked, we have Green Tea; if they are packed in such a way that a small amount of fermentation takes place, the color changes and we have Black Tea. During the fermentation, some of the acid is liberated and for that reason Black Tea is not as injurious as Green Tea.

ICED TEA

1 tsp. tea

$\frac{1}{2}$ c. boiling water

Pour water over the tea and after 1 minute strain off liquid into a tall glass that is half full of cracked ice. Sugar and a thin slice of lemon add to the flavor of the tea for some people.

The mistake is often made of infusing the tea several hours before it is to be used, or even worse, many housekeepers pour water over tea leaves and allow them to stand for several hours. By these

processes, tannic acid develops in very large quantities.

COFFEE

Coffee is the berry or seed of a tropical evergreen tree. The fruit when on the tree resembles the cherry. When the flesh of the fruit begins to shrivel, it is taken from the tree and allowed to dry until the seeds can be easily removed.

These seeds are roasted, ground and sold to us as the coffee we have in our homes. Coffee contains an element, caffeine, which stimulates the nervous system. It is not a food in any sense, since it neither builds tissue nor supplies heat or energy, but has the power of exciting extra action from the nervous system. In most cases a cup of strong coffee at night will defer sleep for hours.

To make coffee. The coffee pot should be thoroughly cleaned, scalded and summed after each using and the grounds thrown away. Many years ago, before science of foods was so clearly understood, people saved the grounds from one meal to another; put in fresh ground coffee, on top of the old grounds or just "boiled over" the old coffee. This is one of the most injurious practices ever employed by housekeepers. It is useless economy as the real coffee strength is extracted in the first few minutes after making, and it is detrimental from the fact that tannic acid develops

very rapidly if the liquid remains long on the grounds. This explains why coffee turns darker in color after it has been made an hour or so.

BOILED COFFEE

(10 cups)

12 tbsp. coffee	1 c. cold water
1 egg white	speck of salt
5 c. boiling water	

Put coffee in large kettle, drop into it the egg white and mix it thoroughly with the grounds. Add the cold water and stir. Pour over the boiling water, place on the fire and boil slowly for 3 minutes. Remove from direct heat and let settle for 4 minutes. Strain through a fine cloth into another vessel. Serve.

1. Why mix egg with the grounds?
2. Why use cold water before the boiling water?

PERCOLATED COFFEE

The coffee is held in a sieve-like receptacle at the top of the pot, while the boiling water and steam are carried up by means of a small tube and forced to filter down through the grounds. This is one of the most satisfactory ways of making coffee, and, aside from the care of the pot, the easiest. Since very little of the water is lost by evaporation, a tbsp. of coffee for each cup of water, either hot or cold, is used, and is allowed to cook about 20 minutes.

LEMONADE

(Two glasses)

2 tbsp. juice ($\frac{1}{2}$ lemon) 4 tbsp. sugar
 $\frac{1}{2}$ c. boiling water

Dissolve sugar in the boiling water. When cool add lemon juice, and ice water to suit individual taste. Adding the sugar to the boiling water completely dissolves it and adds to the flavor. One half c. grape juice may be added or 1 raw egg well beaten.

Lemons grow best in warm climates, and are highly prized for their power of allaying thirst, developing flavors, aiding in emulsifying fats.

CHAPTER XI

TABLE SETTING AND SERVICE

The girl who observes and reads, knows that the manner of table setting and the form of table service changes very often, and for that reason no detailed rules can be given which will be in good form for any specified length of time; the up-to-date hostess observes what good authorities say, from time to time, and is guided accordingly. A few general rules at the present time are:

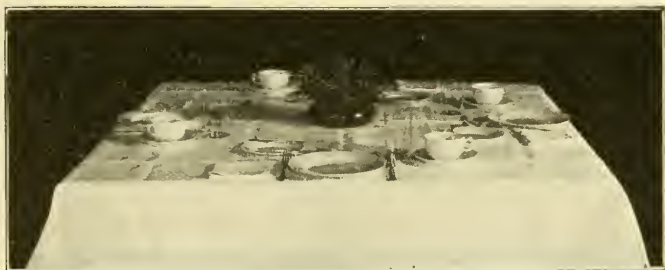


PLATE II. A Table Simply Set for Breakfast or Luncheon

1. Simplicity of arrangement, with strict observance to straight lines. This means that the plates, silver and linen are placed on the table on a line, the napkin folded in a square or rectangle; the ends of the handles of the knives, spoons and

forks are even with each other, and in line with the plate and napkins.

2. The silver should be so arranged that the outside pieces will be used first. "We eat in." It may be fault of the hostess and not ignorance on the part of the guests, if the wrong piece of silver is used, as the table arrangement should be such that no mistakes can be made. Various spoons or forks have no place beyond the plate as was once the custom, when every guest had to "watch the hostess" to know what piece to use with the next course.

3. The good hostess is the one who makes her guests feel comfortable. This can only be done by adhering to the general rules of simplicity. The bare table with doilies, for luncheons and breakfasts, is at present the favorite arrangement, while the damask is for the dinner table. With the exception of this the following arrangements may be carried out in every detail:



PLATE III. A Table Set for Three Courses

TABLE SETTING

(Informal)

1. Cover the table with a clean thick cloth. This is called a silence cloth.

2. Spread the table cloth over the silence cloth with the length extending from head to foot. It should be of such size that from 6 to 8 inches will extend over the sides and ends of the table.

3. Arrange center piece of lace or embroidery and a low bouquet of flowers.

4. Arrange space in front of each person's place for the plate when it is served.

5. Arrange the silver in the order of its use, that to be used first farthest from the plate; the knives and spoons on the right, the forks on the left, all the same distance from the edge of the table as the plate. The knives with the edges toward the plate, the spoons with the bowls up. The forks with the tines up.

6. Place napkin at left of forks, the loose corners toward the edge of the table.

7. Place water glass at point of knife.

8. Arrange salt and pepper shakers and other necessary dishes at convenient places on the table.

9. Place dinner plates before the host, with the meat and vegetable dishes in convenient places from which to serve.

TABLE SERVICE

(Formal)

When passing bread, cream or sugar, and the guest is expected to serve himself, go to the left side, so that he may use the right hand.

In refilling water glasses or coffee cups, go to

the right side. There was, at one time a much used phrase, "Serve to the right and remove from the left," and when convenient it may be followed, but if the dishes to be removed are at the right, it is far better to go to the right than to reach in front of the guest. The general rules for service are *convenience, ease and consideration.*

CHAPTER XII

CANNING, PRESERVING, PICKLING

The secret of successful preserving of foods for future use is *perfect sterilization*. This may be brought about by *drying, smoking, use of salt, thick syrups, acids*, or enclosing the sterilized food in *sterilized jars*.

Sterilization. Minute forms of life, which we call bacteria, are present everywhere in untold numbers. The air we breath, the water we drink, and the food we eat are teeming with them. These bacteria are practically the sole cause of the “spoiling” or fermenting of the various fruits and vegetables. The reproduction of bacteria, which is very rapid, is brought about by one of two processes. The bacterium either divides itself into two parts, making two bacteria where one existed before, or else reproduces itself by means of spores. Spores may be compared with the seed of an ordinary plant. These spores present the chief difficulty in canning the products of the orchard and garden.

All forms of bacteria are killed by complete sterilization. This is nothing more than enclosing the products to be sterilized in jars or cans that

can be sealed air-tight and submitting them to heat of sufficient temperature for a time—long enough to destroy the bacteria that cause the raw material to spoil. Sterilization is readily accomplished by the use of boiling water. There are three different ways by which this can be done. While the parent bacteria can be killed at the temperature of boiling water, their spores retain their vitality for a long time even at that temperature.

In large commercial factories, sterilization is accomplished by subjecting the cans containing the various products to steam under pressure. By this process the temperature is raised to a degree higher than that of boiling water, thereby killing both bacteria and spores at the same time. Smaller factories and the different home-canning outfits usually make use of the “open-kettle” process. Here the cans are submerged in boiling water and kept at that temperature for a time sufficient to destroy bacteria and spores. The third process known as fractional sterilization, is that of keeping cans or jars in boiling water for a specified time upon each of two or three consecutive days.

The process of boiling upon consecutive days is the safest method and is much to be preferred in home canning. The first day’s boiling kills practically all the bacteria, but does not kill the spores. As soon as the jars or cans cool, these spores develop a new lot of bacteria, which begin their

destructive work on the contents. The second day's boiling kills the new lot of bacteria before they have had time to produce spores.

Boiling the third day is not always necessary, but it is advisable in order to be sure that the sterilization is complete.

Jelly is fruit juices sterilized by the medium of hot syrup. All fruit juices will not congeal or make jelly on account of the absence of a substance called *pectin*, a gelatine or gum found in most fruits and vegetables. Pectin dissolves in boiling water and stiffens in cold. It is more abundant in the harder parts of the fruits, the core and the skin. Fruit containing the most pectin makes the best jelly. Quinces, crab-apples, currants, grapes and apples are rich in pectin.

To make jelly. Usually fruit is lifted dripping from the last water where it was washed into the cooking vessel, where it is cooked until the juice runs freely. It then is strained, measured and cooked for at least ten minutes before the sugar, which is measure for measure of the juice before it cooked down, is added. This is cooked until a drop on a cold plate will congeal. If a path is made through the jelly on the plate and it does not run together, it has cooked sufficiently. To insure a clear jelly, the scum should be removed as it forms. When testing jelly remove from the fire each time before the test is made and wait until

the liquid is still. As in candy making, a few seconds longer would make a difference, if it was just right at the time the test was made. The sugar is not added until the juice has partially cooked down, as long cooking lessens the sweetness of sugar. Do not attempt to make more than four glasses of jelly in one vessel. It is better to make it often and in small amounts.

Many housekeepers can their fruit juices in the summer, then make their jelly from this juice in small amounts in the winter. There are three reasons why this is a good plan: First, sugar is usually much cheaper in the winter; second, fresh jelly tastes better and is freer from grape sugar; third, cool weather is more agreeable for this work.

Use of paraffin. Melt any amount of paraffin over a very slow fire and when clear and thin, turn over the firm jelly to the depth of $\frac{1}{16}$ of an inch. Paraffin may be used from year to year if washed and reheated.

GRAPE JELLY

Pick fruit from stems, wash and lift dripping into a cooking pan and heat till juice runs freely. Strain through cheese cloth bag. Use measure for measure of sugar and juice. Cook the juice a few minutes before adding the sugar. When a few drops will congeal on a cold plate, strain into

sterilized glasses and when firm, about 12 hours later, cover with paraffin.

CRAB APPLE JELLY

Wash and quarter firm crab apples. Place in enough water to cover and when soft drain through cheese cloth bag. Use equal parts of sugar and juice and cook until a drop will thicken on a cold plate.

Pour into sterilized jars and let stand covered 24 hours. Cover with paraffin.

BLACKBERRY JELLY

Use only firm berries, not very ripe. Lift from the last water and place dripping in a cooking pan. Cook 15 minutes after boiling begins. Strain through thick cloth. Add equal parts of sugar and cook until a small amount will thicken on a cold plate. Strain again into jelly glasses. When firm cover with paraffin.

CRANBERRY JELLY

(1 glass)

1 c. cranberries (selected) $\frac{1}{2}$ c. sugar

$\frac{1}{3}$ c. water

Pick over cranberries, wash and measure. Add water and cook slowly about 15 minutes. Press through strainer, add sugar and cook 5 minutes longer. Turn into molds and let stand until firm.

The cranberry is the fruit of a slender creeping plant, a native of the Atlantic coast, but grows to some extent in the North Central States. It requires a sandy, marshy land and a high altitude. It is harvested about the first of August and may be kept in storage from 6 weeks to three months before being placed upon the market.

Canning. When canning fruits, a small amount of sugar is usually added to the water which covers the fruit in the jars. The amount depends upon the taste. From 2 tbsp. to 1 c. for each qt. may be used.

When canning vegetables, 1 tsp. of salt to each quart of water may be used. Acids or preservatives should never be used, as they harden the cellulose.

To prepare jars. Wash jars and tops in clean, warm suds. Place in a pan of cold water, enough to cover, and boil 20 minutes. This is called sterilizing.

TO CAN BERRIES

Pack a sterilized jar full of freshly washed berries. Pour over them a syrup made of 1 qt. water and $\frac{1}{4}$ c. sugar. Place in a deep pan or kettle, which has in it some screening or wire enough to keep the jar from resting flat on the bottom of the kettle, and fill with warm water enough to come up to within an inch of the top of the jar.

Cook, with the lid *off*, for 30 minutes after the water begins to boil. Put on the rubber, which has been sterilized, and fasten down the lid permanently. Invert the jar and let it stand for 24 hours. Then place in the kettle in cold water, bring to the boiling point, and cook 30 minutes. Let cool and repeat the third day if there is any doubt that the sterilization is not complete. All berries may be cooked by this recipe. Pears, peaches, and apples may be cooked in water until they can be pierced, then packed in the jars. The first day's cooking will suffice.

TO CAN ASPARAGUS

Cut stalks of proper length to fill jars. Wash in cold water and pack firmly in the jar, arranging stalks as uniformly as possible with tip ends up. Force extra stalks in the center of the can, tips down, to insure a firm pack. Pour over cooled, boiled water to which has been added the proportion of salt. Cook for the three days as directed for "Berries." Spores grow more rapidly in quick-growth fruit or vegetables. Asparagus, beans, corn, tomatoes, peas, etc., must all be cooked the three successive days. The general directions for asparagus may be followed with successful results when canning the other vegetables named.

Preserving. A syrup of equal parts of sugar

and water is first made. Firm fruits which have been pared and cut into pieces, are cooked in this syrup until the liquid will jelly. They should be canned in sterilized jars and perfectly sealed. Soft fruits and berries when cooked in this syrup fall to pieces and are called *jam*. Jam tests for thorough cooking are the same as for preserves. When fruits with the seeds removed are cooked until the cellulose is entirely softened and much of the moisture evaporated, they are called *butters*. Sugar and spices are added just before the butter is taken from the fire, to suit the individual taste, though care must be taken not to add so much that the natural taste of the fruit is destroyed.

ORANGE MARMALADE

6 oranges
2 lemons

3 qts. water
6 c. sugar

Cut oranges and lemons in thin slices, crosswise, removing the seeds. Add to the water and let stand in a covered vessel 24 hours. Boil slowly for 3 hours. Add the sugar and cook until the juice will test as jelly.

Pickling. A weakened vinegar water with sugar and spices added to suit the taste, is scalded and turned over fruit or vegetables in jars, and sealed. The fruit is usually cooked in simmering water until tender, packed in the jars and the pickling juice poured over the fruit until the jar is filled.

Peaches, apples, pears, melon rind, beets, beans, etc., are used mostly for pickling. Melon rind should be soaked in strong salt ice water for an hour before cooking.

SALTED CHERRIES

Fill fruit jars with fresh washed cherries on the stem. Pour over them equal parts of vinegar and water with 1 tsp. of salt to each pt. of liquid. All ingredients should be cold. Seal.

1. Why do we cook some fruits and vegetables three successive days in jars, while others require only one day?

2. Why do we wait until a great amount of water has evaporated from our jellies and preserves before adding the sugar?

3. What is the length of time required to sterilize jars, lids, etc? Why?

SECOND YEAR

CHAPTER XIII

EGGS

As a thickening agent. Since protein coagulates when slow heat is applied and eggs contain a high percentage of protein, their value as a thickening agent may be readily seen when the proper amount of heat for a given length of time is applied. The proper cooking of eggs as this medium is absolutely a test of skill and judgment. If cooked 10 seconds too long or if too much heat is applied the dish may be ruined. Foods thickened by eggs are called custards.

Custards are a composition of eggs and milk cooked very lightly. In custards of the best quality only sugar, salt, and flavoring are added, but in inferior custards, starchy materials are used in place of the required number of eggs. There are two classes of custards, *firm* and *liquid*. The *firm custard* is cooked, undisturbed, until firm. When properly cooked, it has a smooth jelly-like consistency throughout. If cooked too long or at too high a temperature, it is full of holes, curdles and wheys. A firm custard is cooked sufficiently when

the center is firm. *Thin custards* are cooked over water, which is below the boiling point, until they coat the spoon, and are stirred during the entire time required for cooking. If cooked too long they will curdle.

Proportion of egg to milk:

1 c. milk and 1 egg gives a thin custard.

1 c. milk and 2 eggs gives a firm custard.

1 tbsp. milk and 1 egg gives a custard that may be cut in figures for consommés.

THIN CUSTARD

½ c. milk	1/16 tsp. salt
8 drops vanilla	1 tbsp. 1 tsp. sugar
½ egg yolk	

Beat the yolk until light colored. Add the sugar and salt and mix thoroughly. Heat the milk over hot water and stir in the yolk mixture. Stir continually until it coats the spoon. Remove, add vanilla and pour into a soup plate. Beat the egg white until stiff and dry, folding in 1 tsp. sugar. Drop by spoonfuls on the top of the custard, forming each portion in cone shape.

This is decidedly a child's dish, though grown people would be much better off if they ate more desserts of this simple variety.

FIRM CUSTARD

½ c. milk	1/16 tsp. salt
1 egg	1 tbsp. 1 tsp. sugar
dash nutmeg or 8 drops vanilla	

Mix the egg white and yolk until thoroughly blended. Add sugar and salt and beat until well mixed, then add to the milk and stir until the sugar is dissolved. Strain into buttered baking cups and cook in a moderate oven, with the cups in water, until the center is firm. The water in which the cups are placed must not be too hot or the custard will curdle at the bottom. This will require about 30 minutes to cook.

1. Give the different food elements in a custard.
2. Why is custard easy to digest?
3. Why is it a good food for children or invalids?

BREAD PUDDING

$\frac{1}{4}$ c. bread chunks	$1\frac{1}{2}$ tbsp. sugar
$\frac{1}{2}$ c. milk	$\frac{1}{2}$ egg yolk
$\frac{1}{16}$ tsp. salt	dash nutmeg

Beat the yolk thoroughly, add the sugar, salt and milk and stir until the sugar is dissolved. Pour this over the bread chunks and turn all into a buttered baking cup, and bake as for firm custard. Raisins may be added to this. Sprinkle the nutmeg over the top or add 8 drops of vanilla to the milk before mixing it with the bread. When the pudding is firm, remove from the oven, spread a layer of jelly over the top and on this roughly pile the white of the egg, after it has been beaten stiff and dry, with 2 tsp. sugar added. Return to the oven to brown slightly.

Bread Pudding is a very old and wholesome dessert, but it has been out of favor on account of the poor substitutes which have been offered in the place of *good* Bread Pudding.

CHOCOLATE CUSTARD

$\frac{1}{2}$ c. milk	2 tbsp. sugar
$\frac{1}{2}$ egg	$\frac{1}{16}$ tsp. salt
1 tbsp. shaved chocolate	1 tbsp. flour
8 drops vanilla.	

Blend the sugar, flour, salt and egg together. Heat the milk and chocolate over hot water until the chocolate has dissolved. Stir into the egg mixture and cook for 8 minutes. Add vanilla and turn into cold molds. Serve cold. More chocolate and sugar may be added to suit the taste.

BLANC MANGE

$\frac{1}{2}$ c. milk	1 tbsp. flour
$\frac{1}{2}$ egg	$\frac{1}{16}$ tsp. salt
2 tbsp. sugar	8 drops vanilla

Make as Chocolate Custard. Serve with chopped nuts and maple syrup or any crushed fruits over the top.

RICE PUDDING

$\frac{1}{4}$ c. cooked rice	$\frac{1}{4}$ c. liquid custard (uncooked)
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Mix rice with custard, add raisins, and bake in

slow oven until firm. Beaten egg white (meringue) may be added to the top.

MACAROON PUDDING

(Serve 4)

$\frac{3}{4}$ tbsp. gelatine	3 tbsp. sugar
2 tbsp. cold water	$\frac{1}{16}$ tsp. salt
1 c. milk	$\frac{1}{3}$ c. crushed macaroons
1 egg yolk	$\frac{1}{2}$ tsp. vanilla
2 tbsp. crushed almonds	1 egg white
2 tbsp. white raisins (cut in halves)	

Soak gelatine in cold water for 10 minutes. Make liquid custard of egg yolk, milk, sugar and salt. Add the gelatine and, when thoroughly dissolved, put on ice. When it begins to thicken, fold in the stiffly beaten egg white, add the almonds, macaroons and raisins, and mold either in individual dishes or in loaf form. Serve with whipped cream.

CHAPTER XIV

BEEF, FOWL, GAME

The tender cuts of beef are from the loin, the least used of any of the muscular parts of the body—hence its tenderness. The connective tissue is small in amount and the tubes making up the tissue bundles are thin, but contain a high percentage of liquid.

Effect of heat. For this reason the tender cuts of beef require but little cooking and it may be done at a high temperature. The extreme heat applied to the surface of the meat, causes the juices to change to steam which cannot escape because of the crust formed on the outside. This steam is sufficient to break down the connective tissue and to coagulate the albumen.

The food value. These cuts of meat are desirable chiefly because of the ease with which they may be digested, but as a matter of fact, they do not contain as much nutriment as some of the tough parts. The loin cuts are the choice pieces of meat and are expensive. The value received from them is only attained by proper cooking. Many fine pieces of meat are prepared in such a way that

they contain no more nutrition or taste, and are no better than the cheapest cut of the beef.

PAN-BROILED STEAK

Select a porter-house or sirloin steak, 1 to 1½ in. thick. Wipe with damp cloth, trim off fat and bone. Rub a piece of the fat over an iron skillet and, when it is *smoking* hot, put in the meat, increasing the heat, and turn constantly from 10 to 20 minutes. This turning will prevent the juices from escaping. Serve on a hot platter, with slices of lemon, parsley or a butter sauce. Do not add salt or pepper until the last. A sauce may be made by browning 4 tbsp. each of butter and flour, adding 2 c. milk and, when sufficiently cooked, turning in 1 c. mushrooms. This may be served over the steak or with it.

1. Locate on the meat chart a cut of sirloin steak.
2. Why will it cook in 10 min., while it requires 1 hr. for a round steak?
3. What is the cost of sirloin steak per lb.?

BROILED STEAK

Many stoves have broiler attachments and, when possible, this is the ideal way to cook tender steaks. Prepare as for pan-broiled. Lay on the grill of the broiler and with the fire high, cook from 8 to 10 minutes.

PLANKED STEAK

Prepare steak as for pan-broiling, using a pre-

pared oak board instead of the skillet. Heat the plank in a hot oven, lay on the steak and return to the oven, the temperature very high. Cook from 10 to 20 minutes. Remove, spread with butter, salt, pepper, and garnish with potatoes forced through a pastry bag, heated mushrooms and creamed peas. Slices of lemon and parsley add to the appearance.

ROAST BEEF AND BROWN GRAVY

Buy the third, fourth and fifth ribs with the bone. This will weigh from three to four lbs. Bone, wipe with a damp cloth, add 1 tsp. salt for each pound, in the places where the bones were removed. If desired, 1/16 tsp. ground cloves, some paprika and a small piece of bay leaf may be added. Cut the suet in small strips and add it also. Roll and tie and sear (in the baking pan on top of the stove) until well browned on both ends. Fasten the lid and bake in a moderate oven, allowing 20 minutes to the pound. *Do not put water in with the meat.* Remove to a platter and add to the liquid and fat in the pan equal parts of flour, and brown. Pour over this the water from the bones and cook as for white sauce, scraping loose all brown particles from the edge and bottom of the pan. If the gravy is light in color small amounts of beef extract may be added.

To bone a roast. With a sharp knife cut very

close around the bones and remove. This does not require any special skill and is a matter of great economy. Besides knowing that it is done in a cleanly manner, the bones may be placed in cold salt water and simmered for an hour or so, and this extract used for soups or gravies.

To carve a rolled roast. Place the fork, tines up, in the side next to the carver, midway of the roll as it stands on end. Then with a sharp knife, slice the meat, beginning at the farther side and cut toward the fork. Remove each slice, with the knife, to the edge of the platter. The fork should not be removed until the carving is done, except to lower its place in the roast.

1. Why is boning a roast at home an economy?
2. Why is it a cleaner method?
3. How can the bones be used?

FOWLS

The breast of chicken and game is considered to be very easily digested, while the dark meat is tough and hard to liquify. The cooking of fowls and game should be at a low temperature and for a long time, except in the case of very young birds, when the breast may be broiled. The greatest fault of the untrained housekeeper in the cooking of these meats, is in trying to hurry the process, while only the long, slow application of heat can bring about the desired results.

To dress a chicken. The head should be severed from the body to allow free bleeding. Immerse the entire chicken in a pail of water just below the boiling point, holding it by the feet, and lifting it up and down until it is entirely wet, then plunge in a pail of cold water. When cool enough to handle, pull or rub off the feathers. If the chicken is young, there will be small *pin feathers* on the wings, back and legs; if it is old, there will be long hairs on the skin. To remove the pin feathers requires long, careful work by scraping and pulling with a knife. The hairs may be singed off by holding over a quick blaze.

If the fowl is to be cooked whole, an opening should be made just below the breast bone, from thigh to thigh and the internal organs removed, care being taken that the gall is not burst. The liver, gizzard and heart should be cut from the rest of the organs and cleaned for use. If the chicken is to be jointed the following directions may be observed: First, remove the wings; second, remove the first and second leg joints together, then separate; third, open the body below the breast bone by cutting the thin membrane there and between the back and the breast; fourth, remove the internal organs, with their fastenings to the back; fifth, cut the thin membrane which joins the back to the breast and sever; sixth, break the back from the ribs, and remove the oil sack; seventh, cut the

neck from the ribs; eighth, remove the wish bone and divide the breast.

FRIED CHICKEN AND CREAM GRAVY

Joint a small, young chicken. Salt, pepper and roll in flour. Have an iron skillet warming. Put in it $\frac{1}{2}$ c. lard and $\frac{1}{2}$ c. butter. When melted and hot, lay in pieces of chicken and turn fire low so that the pieces will brown but not burn. Turn often to brown evenly. When well cooked, remove to hot platter. Dust into the hot grease 4 tbsp. flour and $\frac{1}{2}$ tsp. salt, stir until brown. Add 2 c. rich sweet milk and let simmer. Serve in separate dish.

SMOTHERED CHICKEN

Joint a young fat hen. Salt (1 tsp. for each lb.), roll each piece thoroughly in flour and lay in a baking dish. Pour over this 3 c. cold water and place in a moderate oven and cook, undisturbed, for two hours.

BAKED TURKEY

When baking a young turkey allow 15 minutes for each pound. An old bird should be steamed an hour and then baked the required time. When thoroughly cleaned inside and out, salt, allowing 1 tsp. for each lb., fill with oyster or chestnut dressing, sew the skin together at the neck and at the lower opening; tie the legs together and the wings

to the body. Bake in a covered pan, at a moderate temperature the required time. When an open pan must be used, a cloth covered with a layer of dough may be laid over the bird to hold the steam.

BAKED CHICKEN

Follow directions for Baked Turkey, using an onion dressing.

ONION DRESSING

2 tbsp. melted butter or	1/16 tsp. pepper
bacon fryings	1/2 tsp. salt
2 c. bread chunks	1/2 tsp. sage
2 tbsp. chopped onion	
hot water to thoroughly moisten	

When mixing, use a fork, so as not to make the dressing compact.

OYSTER DRESSING

2 c. bread chunks	2 tbsp. melted butter
1 tsp. salt	1/16 tsp. pepper
1 c. oysters (if large, cut in fourths)	water to thoroughly moisten

BAKED GOOSE

Simmer gently in a covered vessel 1 hour. Stuff with dressing made of 2 c. bread crumbs, 1 c. diced raw apples, 1/2 c. raisins, 1 tsp. salt, cold water to moisten. Bake slowly 15 minutes for each lb. Make gravy from water in which goose was par-boiled.

QUAIL

Quail should be picked dry, never skinned or scalded. Remove head and feet and open down the back. This leaves the breast whole. Follow recipe for fried chicken.

CARVING A FOWL

The carving knife should be thoroughly sharpened before it is placed on the table. Never place the steel on with the set. The rasping sound that is made as the knife is drawn over the steel is very disagreeable and it is the duty of every housewife to see that this is not a necessary preliminary to the carving.

To stand while carving is permissible, but as sitting is more agreeable to most people, it is as easy to learn one way as another and beginners should practice sitting while carving.

If possible, have a platter large enough to hold the bird and the slices after carving, if not, an extra one should be provided. Lay the bird on the platter with the head toward the left. The fork is placed astride the breast bone and should not be removed up to the No. 8.

1. Sever the drum stick from the second joint.
2. After the thin membrane which joins the second or thigh joint to the body has been cut, this piece can be pushed from the body with the dull side of the knife

and then severed by raising the bird a little to avoid cutting against the platter.

3. Cut around the wing and sever the same way.

4. If but half of the bird is needed, begin to slice the breast by letting the knife follow a slanting line from the front side of the breast toward the wing joint, otherwise remove wing and leg on both sides first.

5. Remove wish bone by putting knife under it at the point of the breast and turning it back.

6. Remove shoulder blade by putting the point of the knife under it, turning it back and cutting the sinews.

7. Tip the bird slightly, and remove the meat known as the oyster and other pieces of meat found on the side bone.

8. Cut through the skin between the breast and ribs in order to have access to the dressing.

9. Cut through the cartilage which unites the breast and ribs and remove the breast bone.

10. Turn the piece over, then place the back of the knife on the piece which unites back and ribs, lift the back piece with the fork, thus breaking the joints and separating the two.

11. Lay the back on the platter inside down and separate in two pieces.

12. Cut thigh in two or three pieces. Serve each plate with light and dark meat and dressing.

CHAPTER XV

WARMED-OVER DISHES

In no other way does a housekeeper display her skill so much as in the making of *left-overs* into attractive and nutritious dishes. It has been truly said that the untrained housekeeper wastes half of what she buys.

To be successful she must know the classes of foods, the proportions of each necessary to make a balanced food, which and how much of *flavoring foods* will be required to give the desired result.

Generally we observe these rules: If the left-over is a protein, we must add a starch and fat to make a balanced food; if it is a starchy food, we add protein and fat. Such flavoring as onions, smoked meats, spices, etc., are used when the foods in combination have no decided flavor. Often in the using of left-overs from roasts, steaks, etc., the flavor has been extracted in the cooking or it is the *end cuts* which have no particular flavor.

CONDIMENTS

Seasoning and spices are used to give relish to food and to gratify the taste.

There is great danger of forming an appetite for these seasonings to such a degree that the flavor of the food may be entirely lost, and as they

also stimulate the flow of the digestive juices their excessive use is injurious from that standpoint.

Pepper is either black, white, or red. Black pepper is the whole dried pepper corn, ground. White pepper is dried pepper corn ground after the black outer husk is removed. Red pepper, or Cayenne, is ground dried pods of the Chili pepper.

Ginger is an underground stem and contains starch. When young it may be preserved and is called candied ginger. When dried it is ground into a powder.

Cinnamon is the bark of a small tree, the best grade coming from Ceylon. We may buy it either as a bark or powder.

Nutmeg and mace are from the same plant. Nutmeg is made by grinding the nut and mace by grinding the covering of the nut. The tree is cultivated in the West Indies.

Cloves are the flower buds of a plant. These, when dried, may be ground or used whole.

Allspice is the dried pimento, ground.

Pimentos are the berries from a tree in the West Indies.

MEAT PIE

(Serve 2)

From cold roast, steaks, or boiled meat.

- | | |
|---------------------------|---------------|
| 1 c. chopped meat | Salt-pepper |
| 1 tbsp. chopped onion | paprika |
| 1 c. white sauce "2 to 1" | to suit taste |
| 1 tsp. dried parsley | |

Add other ingredients to white sauce and pour in a baking dish. Spread over the top a crust $\frac{1}{8}$ in. thick made from biscuit dough, using twice the amount of shortening. Bake 20 minutes in a hot oven.

1. Why add onion and parsley?
2. Tell how you could make over into a palatable dish, 1 c. rice, 1 c. cold mashed potatoes, 1 c. canned tomatoes.

HASH BALLS

1 tbsp. ground meat	1 tbsp. cold mashed pota-
$\frac{1}{8}$ tsp. salt	toes or rice
$\frac{1}{2}$ tsp. diced onion	
$\frac{1}{4}$ egg or 1 tbsp. of white sauce or tomato sauce	"2 to 1."

Mix all together, mold into small flat cakes, and sauté in bacon fryings until browned on both sides.

1. Why use bacon fryings?
2. Name the food elements in these cakes.

TAMALA PIE

(Serve 6)

1 c. ground meat from	1 c. hot water with 1 tsp.
roast	beef extract or 1 c.
2 c. hot cornmeal mush	brown gravy

Season the meat with chili pepper and paprika to suit the taste. Mix thoroughly with the gravy. Line the bottom of the pan with a layer of the mush, turn in the meat, and spread the remainder

of the mush on top. Bake in a hot oven 20 minutes.

There are several brands of the chili peppers on the market, some inferior and some very good. The use of these peppers is not recommended except in very small amounts to serve as flavoring in an otherwise tasteless dish.

CREAMED CHICKEN

(Serve 10)

Use meat from a cold roasted or steamed chicken.

$\frac{1}{4}$ c. butter or chicken fat	1 tsp. salt
2 c. milk or chicken broth	2c. cut chicken
$\frac{1}{8}$ tsp. white pepper	$\frac{1}{4}$ c. flour

Cut chicken in small pieces. Make white sauce of fat, flour, milk. Add salt and pepper. Put chicken in white sauce and when warmed through serve on toast, wafers or rosettes. 1 c. mushrooms may be added to the white sauce.

When serving *light refreshments*, one four lb. hen will make about 4 c. of cut chicken and should serve from 25 to 30 people.

CREAMED BEEF

The same proportions may be used as for creamed chicken. However, the gravy from meat will make a better sauce and often a few pieces of onion and diced potato are added. This is sometimes called hash.

Croquettes are another very attractive form of

using up left-overs, but for some they are indigestible on account of the fat they absorb; though, if properly made and cooked, very little fat penetrates through the egg and crum coating.

A very heavy white sauce is made,—1 c. milk, 2 tbsp. fat and 4 of flour. When cold, the meat or vegetable, ground in small particles, is stirred in, with such seasonings as will blend well. This is made into small cylindrical shapes, rolled in crumbs, in beaten egg, and set aside to dry, about 30 minutes. The thorough drying prevents them from falling to pieces in the hot fat. Heat the fat until a piece of dry bread will brown in 40 counts, then drop in the croquettes and cook until a golden brown, from 40 to 60 seconds.

The following make very good croquettes:

Ground chicken, veal, beef, ham; or rice, macaroni or cheese. The amount of white sauce is $\frac{1}{3}$ that of the other material.

MINCEMEAT

(2 quarts)

1 lb. chopped apples	$\frac{1}{4}$ lb. raisins
1 lb. ground boiled meat	2 tsp. salt
1 lb. currants	$\frac{1}{2}$ c. sugar
$1\frac{1}{2}$ c. apple vinegar	$\frac{1}{2}$ lb. suet
(weakened to suit taste)	$\frac{1}{2}$ tsp. cinnamon
$\frac{1}{4}$ tsp. mace	$\frac{1}{2}$ tsp. allspice

Chop apples, meat, and suet and mix. Add the currants, raisins, spices, sugar, salt. Pour over

all the vinegar and cook slowly until heated through. Seal up in jars until ready to use. Keep in cool place. When ready to be made into pies, 1/8 c. chopped nuts may be added to each pie.

1. Estimate the cost of each quart of mincemeat.
2. What is your idea as to its food value?
3. Is it an extravagant pie for a person in ordinary circumstances?
4. Where is the best cooking suet found? (see Fats).
5. What cut of meat is most used for mincemeat?

CHAPTER XVI

FATS AND OILS

Generally we give the name *fats* to the solids and *oils* to the liquids. However, since the temperature has such a marked effect upon them, this classification will not hold. We also generally speak of obtaining fats from animals and oils from vegetables, but recently several vegetable oils have been manufactured which are solids when cold.

The fats and oils most used are obtained from meat, fish, poultry, butter, cream, olives, nuts, cocoa bean and cotton seed.

Olive oil is obtained from the fruit of the olive tree. The best oil is obtained from the first pressing of fresh, carefully picked fruit; a poorer grade from the second pressing; and after treating the pulp with hot water, a third grade used for soap making. In some parts of Europe, especially Italy, it is commonly employed for frying, but in this country it is generally too expensive. It is, however, best of all fats for deep frying and can be heated to 600 degrees.

Cotton-seed oil, when of the best quality, is excellent for table use. Like olive oil it is good

for deep frying and can be heated to a higher degree than lard, suet, butter, etc. We buy it under many different names.

Suet is the adipose tissue of cattle, and is found around the kidneys, heart and intestines. In the living body it is in the liquid condition and only after death does it become a solid, as suet, tallow, etc.

Lard is the adipose tissue of the hog. Leaf lard, which is best, is found around the heart, kidneys and intestines.

Butter, the fat of milk, is, under the best conditions, an ideal fat on account of its flavor and its ease of digestion.

Nuts. The term "nut" usually brings to our mind a hard, woody covering, surrounding a meat or kernel. The kinds vary so with different localities that we are able to study only a few of the commonest used by us, as the peanut, English walnut, black walnut, and pecan. Their percentage of food elements is:

	Water	Protein	Carbohydrates	Minerals	Fats
Peanut	8%	30%	20%	2%	40%
Pecan	4%	12%	12%	2%	70%
Walnut	4%	18%	16%	2%	60%

The percentage of protein is very high, but, as with cheese, it is in a concentrated form and thorough mastication is necessary to insure ease

of digestion. Nuts also contain a small amount of tannic acid.

It is only within the past few years that their value as a food was recognized. They are most valuable when eaten with other foods, as in salads, breads, and deserts.

Digestion of fats. In the mouth, the saliva merely separates the fats into small globules and they pass on into the stomach as such. In the stomach they are changed very little, with the exception of being split into smaller portions. As they enter the small intestines they are split by the pancreatic juice into fatty acids and glycerine. A small amount is absorbed as such. The bile next acts upon the fats, forming an emulsion in which the globules are finely divided and rendered capable of passing through the membranes to produce heat and energy.

The digestion of fats depends mainly upon getting the globules small enough that they may be easily passed through the walls of the intestines. Separating the fats into such tiny globules is called emulsification. The alkaline pancreatic juice unites with the fatty acid of the fats to form a soap, while the glycerine is set free. Both the soap and the glycerine are more easily absorbed than the original fat.

Fatty foods are valuable to the body because of the material they furnish for heat and energy.

They act in the same way as starch and sugar, except that fats produce between two and three times as much heat as starch.

Fats "shorten" bread mixtures; that is, make them more tender by separating the starch grains of the flour. When using a compound $\frac{1}{3}$ less must be used than when using lard or butter as the latter contain a percentage of water while the compounds are wholly condensed fat.

Heat has much to do with the digestibility of fat, as a strong heat scorches it and decomposition sets in which causes it to be irritating to the mucus membranes of the digestive organs.

PASTRY

Why pies are indigestible. The digestion of fat is not begun in the mouth as is that of starch. Fat undergoes no chemical change in the system until it is emulsified and saponified in the small intestine. In making pastry the starch granules are completely enveloped in fat, these cannot be acted upon by the saliva, hence the digestion of starch in pastry must be postponed until after the fat is acted upon. If the pancreatic juice can discharge its office, all is well, if this fails, the starch becomes so much waste material. For this reason pie is looked upon with fear. Yet, when properly made, occasional indulgence may be permitted.

Pie crust. The underlying principle of good

pastry is expansion. We place *cold* flour and *cold* fat in a bowl placed on crushed ice. The fat is cut into the flour until it resembles a meal; then ice water is cut into this, until the dough is smooth and free from fat or white streaks. Toss this on a cold floured board away from the fire, (a piece of marble or heavy glass is best) roll $\frac{1}{16}$ inch thick, lifting and turning with each stroke of the rolling pin, fit over the bottom of a pie tin, pierce several times to allow the steam to escape, and bake in a moderate oven until well done, about 12 minutes. The air and the ice water which were worked into the cold materials expand immediately after being placed in a hot oven; result—a flaky, crisp crust. When a baked shell is wanted it is better to invert the pan and fit the dough over the outside.

Materials: $\frac{1}{3}$ as much shortening as flour.

$\frac{1}{5}$ as much ice water as flour.

$\frac{1}{4}$ tsp. salt to each c. of flour.

When using butter or lard. $\frac{1}{2}$ as much as flour may be used.

CUSTARD PIE

One crust pies. Since pie tins differ so widely it is difficult to give the amount of flour required for a crust; but for the average tin, $\frac{3}{4}$ c. flour will make one crust. Do not roll the crust too thin.

Line pie tin with dough, cutting it around the edges larger than the pan. Pinch with the finger

tips, so that it will stand. Fill with liquid made as "firm custard," and bake until the center is firm, about 30 minutes.

CREAM PIES

Bake a pie shell on an inverted pan. Make a cream filling as for cream puffs. Fill the shell with the cream filling, add meringue to the top and return to the oven to brown; or make,—

Banana cream pie, by half filling the shell with thinly sliced bananas, (with sugar added) and filling to the top with the cream and adding meringue; or make,—

Cocoanut cream pie, by mixing cocoanut with the cream and filling the shell. To make meringue, beat an egg white stiff and dry. Add 1 tsp. sugar.

Two crust pies. After the crust is made, divide it into two parts. Roll one, $\frac{1}{16}$ inch thick and line the pan. Roll the other, making scroll or leaves in it—these to serve as an escape for the steam. Fill the pie, add such seasonings as are recommended, lay the top crust on very loosely, and fasten to the bottom crust by pressing with a fork or by pinching them together with the thumb and finger.

APPLE PIE

Fill the crust with thin slices of firm, tart fruit. Sprinkle over the top from $\frac{1}{2}$ to 1 c. sugar mixed with 1 tsp. cinnamon. Dot over it small pieces of

butter and from 6 to 8 drops of lemon extract. Moisten the lower crust, lay on the top crust, press together and bake about 30 minutes or until the fruit is tender and the crust is brown.

Any fruit pie as peach or apricot may be made by the same directions, or by leaving out the cinnamon and lemon and adding other flavors that might blend with the fruit.

BERRY PIES

Follow general directions for apple pie. The great difficulty with making berry pies successfully is in keeping the juice from running over the edges. They should not be baked in as hot an oven as other fruit pies. The crusts must be carefully pressed together, and the slashes in the top crust must be of sufficient number to allow the steam to escape. No extra moisture need be added, but from 1 to 2 tbsp. of flour, sifted with the sugar should be added to each pie.

CHEESE STRAWS

From any pie crust that is left cheese straws may be made. Roll plain pastry $\frac{1}{4}$ inch thick. Sprinkle $\frac{1}{2}$ with grated cheese to which has been added a few grains of salt and cayenne. Fold, press edges firmly together, fold again, pat and roll out $\frac{1}{4}$ inch thick. Sprinkle with cheese and proceed as before. Repeat twice. Cut in strips

5 inches long and $\frac{1}{4}$ inch wide. Bake 8 minutes in moderate oven.

SUET PUDDING

(Serve 2)

$\frac{1}{4}$ c. chopped suet	$\frac{1}{4}$ tsp. soda
$\frac{1}{4}$ tsp. cinnamon	$\frac{1}{4}$ c. molasses
$\frac{3}{4}$ c. flour	$\frac{1}{8}$ tsp. allspice
$\frac{1}{4}$ c. milk	$\frac{1}{8}$ tsp. salt
$\frac{1}{4}$ c. chopped raisins	

Mix dry ingredients. Chop suet fine, mix with milk and molasses, then with dry ingredients. Add fruit last. Grease baking powder cans and fill two-thirds full. Steam one hour. Larger amounts must be cooked longer. Four times this recipe will serve eight people and should steam three hours. Serve with hard sauce.

Dates or figs may be added to this recipe and it is then called fig pudding or date pudding.

HARD SAUCE

$\frac{1}{4}$ c. butter	1 c. pwd. sugar
1 egg white	$\frac{1}{8}$ tsp. nutmeg
1 tsp. vanilla	

Cream butter and sugar, add white of egg, unbeaten, and the vanilla, and beat together thoroughly. Grate nutmeg over the top and set in a cool place until ready to serve. One-half c. of whipped cream may be added instead of the egg.

1. Why should a person with a weak digestion eat

very sparingly of this pudding? What do we mean by "weak digestion."

POTATO CHIPS

Wash and pare potatoes. Slice thinly into a bowl of ice water. Let stand $\frac{1}{2}$ hour. Pat dry between towels, fry in deep fat until golden brown, keeping in motion. Drain on brown paper and sprinkle with salt.

FRENCH FRIED POTATOES

Cut pared potatoes in strips $\frac{1}{8}$ inch thick and wide and 3 inches long. Fry in deep fat until tender.

CHAPTER XVII

BACTERIA—YEAST

Dirt is matter out of place. It may be animal, vegetable, or mineral.

Dust may be composed of the three classes of dirt and is a powder, so fine that it will fly in the air. If animal and vegetable dust is left undisturbed where it settles, tiny plants will grow. These plants are known as molds, yeasts and bacteria.

Bacteria are the smallest and simplest of known living things, of the vegetable family. Each consists of a single cell, endowed with the characteristics of living animals in as much as they take food, change it into their own substance and give off waste. This waste or excretion sours milk and renders fish and all fresh foods unfit for use. Such foods are said to be spoiled. The brown spots on bananas and other fruits are good examples of the work of bacteria.

Molds grow from vegetable dust in the form of long threads which, by uniting, form a frame work over the substance they are using as a food. They grow and multiply rapidly in warm moist places and destroy food and clothing.

Mildew is a form of mold.

Yeast is the plant that produces fermentation or "working" in many liquids, fruits, juices, preserves, etc.

From a lesson on bacteria in Physiology prepare to answer the following questions:

1. Why should food eaten raw or unskinned be thoroughly cleaned?
2. What sanitary end is attained by cooking food?
3. Why are oranges or bananas safer than grapes when bought from a street vender?
4. Why should milk receptacles be thoroughly scalded or sunned?
5. What is mildew, and under what conditions in the house is it likely to occur?

YEAST

In the fall, we dig up our flower bulbs, pack them in dry soil, and put them in a place—the temperature of which is such that they will live, but not grow until warm weather comes. Then we put them out again, and the warmth and moisture and soil causes them to grow.

The small cake of yeast that we buy is a starchy mixture packed full of tiny plant-bulbs, known as yeast plants, which, mixed with certain material, and made warm enough, begin growing, budding and reproducing. In growing yeast plants these facts must be considered:

They grow and multiply very fast.

Note: Read in an Agriculture the various topics under "Bacteria."

They grow only when warm and moist.

They grow best at temperatures from 75 to 80 degrees.

They may be forced to grow at a higher temperature, but a great heat kills them.

Cold checks their growth, but does not kill the plants.

Frozen yeasts have been thawed out and made to grow.

When yeast plants are fed upon a sugar with moisture they absorb the sugar and give off from their cells compounds called carbon dioxide and alcohol.

Fill a glass half full of sweetened fruit juice and place in it a small amount of yeast. Place the glass in warm water and observe the change which will take place in a few minutes.

In bread making the cells feed upon the sugar in the flour and that which is added in the bread making, and, as the carbon dioxide is given off, it collects in tiny sacks and makes room for itself in the dough. These sacks are the holes we see in the slices of bread. If unbaked bread is kept at even temperature the gas formation will be about the same throughout the dough and the sacks will be of a uniform size, giving us an even-grained bread; but we can readily see how a strong heat on one side and perhaps a cold draft of air on the other side would cause an uneven expansion

and a difference in the texture of the bread.

Examine living yeast under the microscope. Yeast plants are so small that they cannot be seen by the naked eye, yet they are in the atmosphere, blown everywhere by the winds. These are known as wild yeasts, but may be captured very easily if a glass of fruit juice be placed where the warm air can get to it. Ordinarily we would say "the juice has soured."

Yeast plants are very plentiful around hop fields. A pail of sweetened water left in a hop field will, in a short time, be full of tiny bubbles or foam. Cornmeal, stirred into this water until it forms a stiff dough, may be rolled to a thickness of $\frac{1}{2}$ inch, cut in squares, dried, and used as yeast cakes.

Another form of yeast is made by mixing a very fine flour (rice) in the hop water, making this into cakes, and wrapping these in tinfoil while they are still moist. This is called compressed yeast.

Bread made from the dry yeast, which requires a longer time for growing, is called Long Process Bread. This usually requires about 18 hours to make and bake.

Well made bread should have:

An evenly browned crust without breaks at the sides or ends.

Even texture inside.

A "nutty" flavor.

Bread bakes in an uneven shape when the heat of the oven is irregular, and it has an irregular grain when the temperature during the rising period is uneven.

WHITE BREAD

(1 loaf)

1 cake compressed yeast	1 tbsp. fat
2 c. warm water	1½ tsp. salt
flour to make stiff dough (about 6 cups)	1 tbsp. sugar

Dissolve the sugar and fat in the warm water. Add the yeast and stir until dissolved. Add enough of the flour to make a batter and beat for 10 minutes. Add the salt and the rest of the flour and knead until the dough is elastic and will not stick to the hands. The exact amount of flour can not be given since flours differ as to the amount of moisture they will absorb. Place in a well greased bowl, in a warm place, where the temperature is even and let rise 2 hours. The top of the dough should be lightly oiled. Mold into a loaf, grease on top, and when the size has doubled, bake 60 minutes in a moderate oven.

WHOLE WHEAT BREAD

(1 loaf)

1 cake compressed yeast	1 tbsp. fat
1 c. warm water	2 tbsp. brown sugar
¾ tsp. salt	½ c. warm milk

Soak yeast in warm milk until thoroughly dissolved. Add sugar and fat to the water and, when dissolved, add to the milk and yeast. Beat in the flour gradually, with the salt added. Knead and bake as white bread, only lower the temperature of the oven when baking.

GERMAN COFFEE BREAD

(1 loaf)

1 c. compressed yeast	1 egg
$\frac{3}{4}$ c. warm milk	$\frac{1}{2}$ c. sugar
$1\frac{3}{4}$ c. flour	2 tbsp. fat
$\frac{1}{2}$ c. raisins	$\frac{1}{2}$ tsp. salt

Dissolve the yeast and 1 tbsp. of the sugar in the warm milk and add $\frac{3}{4}$ c. flour. Beat well and set in a warm place to grow until light and spongy (about 1 hour). Cream the fat and the rest of the sugar, add the egg, salt and raisins (well floured) to the sponge. Add flour until you have a cake batter and beat for 5 minutes. Turn into a bread pan and let rise until twice its size, then bake in a slow oven until the center is firm (about 25 minutes).

This bread is especially a food for breakfast.

LIGHT ROLLS

Follow the recipe for white bread until time to mold into loaf form. Then make into small balls the size of a walnut, greasing each one before

placing it in a well-oiled pan. Crowd them very closely together and when twice their size bake in a quick oven for 20 minutes.

PARKER HOUSE ROLLS

Follow recipe for light rolls up to the time for molding into loaves, then roll the dough into a sheet $\frac{1}{2}$ inch thick and cut in circles about 2 inches across. With the handle of a knife, press through the center until it forms a hinge, butter one side and fold the one over the other. Place in a pan and, when twice their size, bake.

NUT BREAD

(1 loaf)

2 c. flour	1 tsp. salt
4 tsp. B. P.	$\frac{1}{4}$ c. sugar
2 eggs	1 c. chopped nuts

Sift the dry ingredients. Add the eggs and the milk until it is a stiff drop batter. Add the nuts and pour into a greased pan. Let rise 20 minutes in a warm place. Bake in a moderate oven 40 minutes.

BROWN BREAD

(1 lb. coffee can full)

1 c. yellow meal	$\frac{3}{4}$ c. molasses
1 c. whole wheat flour	$\frac{1}{2}$ tsp. soda
1 c. flour	1 tsp. salt
4 tsp. B. P.	milk

Mix dry ingredients, add molasses and milk until it is a drop batter. Bake in tins which are $\frac{2}{3}$ full in a pan of boiling water for three hours or in a slow oven for $1\frac{1}{2}$ hours.

TEA BISCUITS

(6 biscuits)

1 c. flour	2 tsp. B. P.
$\frac{1}{4}$ tsp. salt	2 tbsp. fat
1 egg	milk to make soft dough

Sift dry ingredients, chop in fat, drop in egg whole, add the milk and mix thoroughly until it is a soft dough. Roll $\frac{1}{2}$ inch thick, cut in circles and bake in a moderate oven until brown and well done. These may also be used for short cakes.

CHAPTER XVIII

CAKES

Cakes are of two classes, those made with butter as the various layer, pound, or loaf cakes, and those made without butter as sunshine, sponge, and angel food.

Cakes are a form of batter. For fruit or nut cakes the batter must be made stiff enough so that the nuts or fruits will not sink to the bottom. Plain cakes may be a pour batter, but generally we designate them as a "tear batter," that is, the batter seems to tear away from the edge of the vessel instead of drop.

A thin batter cake may be baked in a quicker oven than a thick batter cake. In general a cake should be proportioned:

$\frac{1}{4}$ to $\frac{1}{3}$ as much fat as sugar.

3 times as much flour as sugar.

1 whole egg or 2 whites for each cup of flour.

Though material and conditions differ so widely that no definite rule in proportion can be given.

If the flour is sifted several times it will hold the air better. It should be sifted once, measured,

then sifted several times. The sugar should be fine. It is best to use only the sugar that will fall easily through the sifter,—using the coarse in foods where it must be dissolved. On account of expense, the cotton seed oil compounds are used more generally than butter. When using them add $\frac{1}{4}$ tsp. salt for each cup and use $\frac{1}{3}$ less than the recipe calls for if butter is designated. Since these compounds are a concentrated oil, the same amount as compared with butter would make the batter too rich.

To cream butter or other fats. Beat the material with a wooden spoon until light and creamy. The texture and appearance will have changed decidedly when air is beaten into it.

Pans may be:

1. Greased.
2. Greased and sprinkled with flour. (All flour that does not adhere should be shaken out.)
3. Lined with oiled paper (for very old pans).
4. Used dry (for all cakes without butter).

Steps in cake making:

1. Arrange all utensils for convenience.
2. Measure and collect all materials. Sift flour and B. P. several times.
3. Prepare the pans.
4. Regulate the heat of the oven, unless the cake is to be placed in a cold oven.
5. Combine and bake.
6. Cool and ice.

Methods of combining:

First,

1. Cream fat.
2. Add sugar, cream again.
3. Add eggs whole (yolk and white, or either separated) and beat the mixture thoroughly.
4. Add flavoring.
5. Add flour and milk and mix lightly until the desired consistency is reached. Fruit or nuts should be floured and folded into the batter the last thing.

After the flour and baking powder is added the batter must be stirred as little as possible as the gas, which forms as soon as baking powder and moisture is combined, will escape.

Second,

1. Cream fat and sugar (and egg yolks if used).
2. Add flour, milk and flavoring.
3. Fold in beaten egg white.

Forms of baking:

Layer

Loaf

Roll

Individual

Sheet

The sheet cake is decidedly the popular form for cakes at the present time. When baked they should be about 2 inches thick, the icing adding $\frac{1}{4}$ to $\frac{1}{2}$ inch more.

Temperature for baking. Many cake bakers who use gas ovens, that heat very rapidly, place the cake in the oven, light the fire, and after 10 or 15 minutes, turn off all of the heat. This is a very successful way if the housekeeper knows her oven thoroughly, but it is not recommended for general use. Generally the most successful way is to have the oven at a moderate temperature (see Degrees of Heat in Cooking) and continued at that degree until the cake is baked.

It is usually considered that "it is the baking and not the making" that effects the results of cake making.

Time for baking:

Layer or sheet from 20 to 30 minutes (depending upon the thickness).

Loaf from 40 to 60 minutes (depending upon ingredients and thickness).

Tests for telling when a cake is done:

1. When it shrinks from the sides of the pan.
2. When touched in the center it springs back.
3. When hissing ceases.

Causes for falling:

1. Too much fat.
2. Jarring.
3. Draught of cold air.
4. Too much sugar.
5. Not enough leavening.

Causes for cracking:

1. Too hot oven.
2. Uneven heat.
3. Too much flour.

PLAIN CAKE

$\frac{1}{2}$ c. flour	8 drops vanilla
1 tbsp. fat	$\frac{1}{8}$ tsp. salt
1 tsp. B. P.	$\frac{1}{2}$ egg (yolk and white
3 tbsp. sugar	mixed)

milk to make tear batter

Make by combination method No. 1.

Six times this recipe will make a loaf or sheet cake.

WHITE CAKE

$1\frac{1}{2}$ tbsp. fat	10 tbsp. flour
4 tbsp. sugar	1 tsp. B. P.
1 egg white	8 drops vanilla
$\frac{1}{8}$ tsp. salt	milk to make tear batter

Make by combination No. 1. From four to six times this amount will make a large cake.

CHOCOLATE CAKE

1 tbsp. fat.	2 tbsp. shaved chocolate
$\frac{1}{8}$ tsp. salt	1 tsp. B. P.
4 tbsp. sugar	1 egg yolk
$\frac{1}{2}$ c. flour	8 drops vanilla

milk to make heavy batter

Melt chocolate over hot water. Cream fat, sugar and egg yolk. Add melted chocolate (not hot) and flavoring, then the dry ingredients and

milk. The amount of chocolate a cake contains is a matter of taste. More or less may be used, as desired. For a large cake, use 4 to 6 times these amounts.

SPICE CAKE

1 tbsp. fat	1 tsp. B. P.
$\frac{1}{8}$ tsp. ground cloves	$\frac{1}{8}$ tsp. salt
4 tbsp. sugar	2 tbsp. shaved chocolate
1 egg yolk	2 tbsp. hot mashed potatoes
$\frac{1}{8}$ tsp. cinnamon	1/16 tsp. nutmeg
milk to moisten	
	$\frac{1}{2}$ c. flour

Melt chocolate and mix thoroughly with the potatoes. Keep these in a warm place until used. Sift dry ingredients together. Cream fat, sugar and egg yolk. Add potatoes with the chocolate to the dry ingredients, and milk to make tear batter. Bake into sheet or loaf form. Caramel or chocolate icing should be used.

ANGEL FOOD CAKE

As eggs differ so materially in size, for this cake the whites should be designated by measure instead of number. From 11 to 13 whites are usually required to fill a cup. One c. each, egg white, flour and sugar, with 1 tsp. cream of tartar, flavoring and $\frac{1}{8}$ tsp. salt make the ordinary loaf cake. Small amounts cannot be made so successfully. The eggs must be fresh, so they will hold

the air. The sugar must be fine and the flour, a pastry flour.

Beat the egg whites stiff and dry. When partially beaten, sift over the cream of tartar. Acid has a hardening effect upon albumen and thus helps the beaten whites to hold the air. Sift the sugar and the flour separately three times, then together once. Fold this into the beaten eggs, very gently from the side, adding the flavoring with the salt. Turn into a dry pan and bake in a moderate oven. When done invert the pan and cool. If the pan is smooth and dry, the cake will come out of its own accord.

SUNSHINE CAKE

$\frac{1}{4}$ c. yolks	1 c. sugar
$\frac{1}{2}$ c. whites	1 tsp. cream of tartar
1 c. flour	1 tsp. lemon extract

Beat egg yolks until thick. Add sugar and $\frac{1}{8}$ tsp. salt. Fold in beaten whites with cream of tartar and flavoring. Fold in flour. This may be baked as a butter cake.

SPONGE CAKE

$\frac{1}{8}$ lemon (grated rind and juice)	$\frac{1}{4}$ c. flour
$\frac{1}{4}$ c. sugar	1 egg

Add lemon rind and juice to the sugar and mix well. Separate the egg. Beat the yolk light, add

the sugar gradually and beat thoroughly. Beat the white of the egg stiff, fold it lightly into the batter, then sift in the flour a little at a time, mixing lightly. Bake until the center is firm and it shrinks from the pan. A sponge cake will shrink when removed from the oven and will have a sugary crust on top.

CAKE ICINGS

Frosting—Egg white beaten to the frothy stage may have a small amount of sugar added.

Meringue—Egg white beaten stiff, with sugar added.

Icing—Cooked sugar and water syrup beaten into stiffly beaten egg white.

Uncooked icings are made by blending powdered sugar with thick cream until it forms a paste. This is often used on angel food cakes.

Frostings or meringues are very seldom used for cakes. Icings fail unless the sugar is in the right proportion to egg white and is cooked to the required degree.

When icing is so thin that it will run off the cake, it should be placed in a vessel over hot water and cooked until it becomes grainy around the edge. There is too much moisture in it, either from the egg or the syrup, and reheating will evaporate it.

If the icing is too hard to spread, place it in a

vessel over hot water, add a few drops of cold water and when melted it can be spread.

WHITE ICING

1½ c. sugar	¼ tsp. cream of tartar
10 drops vanilla	¾ c. water
1 egg white	

Read "Fondant Making" before making this icing.

Cook sugar and water with cream of tartar until it spins a thread about 6 inches long. Stream into the beaten egg white and beat until it feels grainy around the edges. Spread with a silver knife on a cold cake. Various nuts, fruits and flavorings may be added to this icing.

CARAMEL ICING

1¼ c. brown sugar	2 whites (beaten stiff and dry)
½ c. water	
½ c. granulated sugar	

Cook until it spins a thread 6 inches long. Pour slowly over the whites, beating meanwhile. Set over hot water and beat it as it cooks, until it will hold its shape and is slightly granular around the edge. One-fourth c. nuts may be added if desired. This will not run or stick and will stay soft for several days.

CHOCOLATE ICING

1 c. sugar	2 tbsp. shaved chocolate
1 tbsp. butter	1 c. water
1 tsp. vanilla or ½ c. nuts	

Cook, add flavoring or nuts, and beat until it begins to crystallize. Spread on cake.

The same proportions of brown sugar, butter and water may be cooked the same way.

1. Of what food value are cakes?
2. Are cakes a balanced food?
3. For whom are they indigestible?
4. How may we make them so they will be more easily digested?

CHAPTER XIX

SOUPS AND SALADS

SOUPS

Soups are liquids which contain the flavorings and extracts of meat and vegetables. Their value to the body lies chiefly in their stimulating effect upon the digestive fluids. The food value, even in the strong soups, is so low that it is a mistake to depend upon them for building material. However, in some thick soups which contain macaroni, peas, beans, etc., a small amount of nourishment is obtained. Clear soups contain about 98% water, $\frac{1}{2}\%$ mineral, $\frac{1}{2}\%$ protein, 1% fats. Thick soups contain only about 90% water, 8% carbohydrates and fat, and $1\frac{1}{2}\%$ protein and $\frac{1}{2}\%$ mineral.

To cook foods and especially meats for soup, they should be placed in cold water and the temperature raised very slowly. This gradually draws out the extracts and albumens: When meats are placed in water and it boils very soon afterwards, a brown scum gathers on the top. This is the albumen which was hardened by the strong heat and since it cannot be dissolved again

it may as well be skimmed off, but in so doing the most nutritious part of the soup is lost.

We serve soups at the beginning of our luncheons and dinners, the heavy soups at luncheons, as usually the other courses will be light, but at dinner, when heavy meats and vegetables and pastries are to follow, the clear soups are served. Cheese straws, and crisp wafers when served with soup, add to the food value.

Stock is the clear extract made from cooking lean meat, bone and fat. A careful housekeeper saves the meat scraps, bones from roasts, etc., and makes the stock for her soups without additional expense.

Soups are divided into two classes,—soups with stock and soups without stock. Under the first we include:

1. Bouillon, made from lean meats or vegetables delicately seasoned and cleared.

2. Consommé, usually made from two or three kinds of meats highly seasoned with spices and herbs, and cleared.

Under the second we include:

1. Cream soup, made of vegetables or fish, white sauce and seasoning. A cream soup may or may not be thick.

2. Pureé, made from vegetables or fish which have been cooked until they are tender enough to be forced through a sieve and retained in the soup. Always thick.

3. Bisques, made as Pureé from fish or meat. Very thick.

CLEAR CONSOMMÉ

(Serve 6)

1 beef knuckle	bones from chicken or
1 ham bone (small)	turkey
4 qts. water	

Simmer very gently for three hours. When ready to serve the water should have evaporated until only 1 qt. is left. Season with salt, ground cloves, and cayenne to suit the taste. Strain until clear and serve hot in tea or bouillon cups.

TOMATO BOUILLON

$\frac{3}{4}$ c. tomatoes	$\frac{1}{2}$ tsp. diced onion
2 cloves	$\frac{3}{4}$ c. water
$\frac{1}{8}$ tsp. sugar	small piece bay leaf

Simmer all together until it is reduced to the original amount of tomatoes. Strain, add salt, pepper, cayenne and reheat. Serve in cups.

VEGETABLE SOUP

1 beef shank	1 c. peas
1 c. string beans snapped	1 c. diced turnips
1 c. chopped cabbage	1 c. diced carrots
2 tbs. diced onion	1 c. tomatoes

Simmer shank for 1 hr. in 3 qts. water. Add beans and carrots, and simmer $\frac{1}{2}$ hr. Add the other vegetables and simmer $\frac{1}{2}$ hr. longer. Season with salt, pepper and cayenne to taste. Stir each time before filling the dishes, so that por-

tions of the vegetables may be served with each dish.

CREAM OF CORN SOUP

$\frac{1}{4}$ c. corn
1 tsp. flour

$\frac{1}{4}$ c. milk
1 tsp. butter

Use canned or stewed corn. Cover with water. Cook until soft, mash through a sieve, add enough cold water to bring it up to the first measure. Make cream sauce of butter, flour and milk. Add corn pulp, salt and sugar to taste. Serve hot.

POTATO SOUP

(Serve 2)

$\frac{1}{2}$ c. diced raw potatoes	$\frac{1}{8}$ tsp. celery seed
1 tsp. flour	$\frac{1}{2}$ tbsp. chopped onion
1 tsp. butter	1 c. milk

Cook potato and onion together until soft. Strain. Make cream sauce, add celery seed, salt and pepper. When hot, pour over the potato pulp. Serve.

CREAM OF TOMATO SOUP

(Serve 2)

1 c. tomatoes	2 cloves
1 tsp. onion	1 c. water

Cook slowly until the water has evaporated and 1 c. of tomato juice remains. Strain. Make $\frac{1}{2}$ c. white sauce "1 to 1." Have both the tomato juice and the white sauce hot and just before mix-

ing them add $1/16$ tsp. soda to the tomatoes to neutralize the acid. When thoroughly mixed, if there are any lumps, strain, and pour into a heated soup plate and serve.

BEAN PURÉE

(Serve 2)

1 c. soup beans, which have been cooked until soft, about 6 hours.

1 c. broth in which beans were cooked and in which a ham bone was simmered.

Mash beans through a sieve and mix thoroughly with the broth. Season with paprika and cayenne to taste. A small piece of onion may be simmered with the broth, to impart flavor.

SALMON BISQUE

(Serve 2)

$1/2$ c. salmon	$1/4$ tsp. lemon juice, dash
1 c. water	nutmeg
	$1/8$ tsp. salt

Simmer salmon, water, lemon juice and salt, until water has evaporated. Press through a sieve, and mix thoroughly with 1 c. white sauce "3 to 1." Reheat, strain into a hot soup dish, sprinkle nutmeg over the top and serve. A tsp. of whipped cream may be added to each dish.

SALADS

Salads are a combination of the green vege-

tables, with fruits, meats or other vegetables and a French or mayonnaise dressing.

They are given the place on our menus, first after the meat or heavy course, because they contain the food stuffs which call forth digestive fluids and therefore aid in the digestion of the heavy course. It is now considered very necessary to give the salad a place in every heavy dinner and when well made and with the right combinations it has a high food value.

Different dressings are made for salads, tastes varying as to the best.

French dressing. 1 c. oil (olive or salad), 5 tbsp. acid (lemon juice or vinegar), $\frac{1}{2}$ tsp. salt, dash cayenne and $\frac{1}{4}$ tsp. paprika. Mix all together and beat thoroughly before turning over the salad. One tbsp. of sugar may be added for a fresh tomato salad or for any salad with which the taste of sugar blends.

Mayonnaise. 1 egg yolk, blended with $\frac{1}{2}$ tsp. salt, $\frac{1}{4}$ tsp. paprika, dash cayenne, 2 to 4 tbsp. vinegar. Beat into this 2 c. oil. This should make a very heavy dressing for vegetables and fruit. For meat, mustard may be added. Many times, without any apparent reason, this dressing will fail to thicken. If, after streaming in a small amount of oil, it is thin, do not attempt it farther with that egg. Use another yolk and when that thickens, the first egg and oil may be added with-

out fear of failure. These cautions may insure success: be sure of a fresh egg and keep the oil cold. The albumen in an old egg will not have sufficient strength to hold the oil in the form of an emulsion.

Roquefort cheese salad dressing. $\frac{1}{4}$ lb. Roquefort cheese blended with French dressing until it forms a smooth paste. This is especially fine for vegetable salads, as tomato, asparagus, lettuce, etc. This amount will serve ten people.

Cooked salad dressing. One c. weak vinegar water heated. Blend 1 egg yolk, 1 tbsp. flour, 2 tbsp. sugar, $\frac{1}{4}$ tsp. salt, speck cayenne, $\frac{1}{4}$ tsp. paprika and a small amount of water, enough to form a paste. Stream slowly into the hot vinegar and cook over water for 8 minutes. Remove and beat into it 1 tbsp. oil or 1 tbsp. melted butter. When cold, thin any amount of it with whipped cream. Mustard may be added but in small amounts, as its use is not recommended in any diet.

To serve a salad, of a combination that will be in harmony with the other courses, is one of the marks of good training on the part of hostess or housekeeper.

A meat salad should only be served at *luncheons or with other refreshments* to take the place of a meat course, never at a dinner where there has been a heavy meat course.

Fruit salads are most appreciated at the dinner or luncheon, when the first course has been a vegetable soup, or on a refreshment plate where meat and vegetables are served.

Vegetable salads may be served when the first course has been a fruit or when the desert is to be a fruit. If the dinner course contains dry vegetables, and a vegetable salad is to follow, it must be of the fresh variety.

There are no limits to the possibilities of salads as to combination and manner of serving, but the points to remember in making salads successfully are:

The salad must blend with the other courses.

The salad must not repeat the other courses.

The salad must be dainty and attractive in arrangement.

The dressing must be well made, well seasoned, and used with discretion.

Wafers, cheese straws, butter crisps or cheese crisps may be served with a salad.

POTATO SALAD

(Serve 6)

- | | |
|--------------------------|------------------------|
| 2 c. cold diced potatoes | 1 tsp. diced carrots |
| 2 tsp. capers | 1 c. chopped celery or |
| 1 tbsp. diced onion | 1 tsp. celery seed |

Sweet peppers and hard-cooked eggs may be added

Mix thoroughly with any dressing. Pile loosely

on crisp lettuce leaf. One tbsp. diced beets may be added to the top or grated cheese.

TOMATO SALAD

Select smooth ripe tomato. Peel. Cut off top, partially hollow and fill with diced cucumbers. Place on lettuce leaf and cover with French dressing or Roquefort cheese dressing.

ASPARAGUS SALAD

Arrange 6 tender asparagus tips through a ring of green pepper, on a crisp lettuce leaf, and pour the dressing over them.

CABBAGE SALAD

2 c. shredded cabbage	1 tbsp. celery seed
1 sweet red pepper	$\frac{1}{4}$ c. chopped parsley

Mix well with dressing.

Either dressing may be used with the following combinations:

Cauliflower and beets.

Cauliflower and pimientos.

Shredded lettuce, sliced tomatoes, green peppers cut into bits.

GELATINE SALAD

$\frac{1}{2}$ box gelatine	$\frac{1}{2}$ c. sugar
$\frac{1}{2}$ c. cold water	juice 1 lemon
$\frac{1}{2}$ c. mild vinegar	1 tsp. salt
1 pt. boiling water	2 pimientos
1 c. finely shredded cabbage	2 c. celery (cut in small pieces)

Soak the gelatine in cold water 5 minutes, add boiling water, vinegar, lemon juice, sugar and salt. Strain, and when beginning to set, add remaining ingredients.

Turn into small molds and chill. Serve on lettuce leaf with mayonnaise dressing. This is a delicious accompaniment to cold chicken or veal.

There are many varieties of the gelatine salads and, since they may be made hours before they are to be served, they are very popular.

FRUIT SALADS

WALDORF SALAD

(Serve 6)

2 c. chopped apples	12 maraschino cherries
$\frac{1}{2}$ c. chopped celery	(cut fine)
$\frac{1}{2}$ c. chopped nuts	

Mix these thoroughly in 1 c. cooked salad dressing and serve on lettuce leaf. The cherries may be halved and arranged on the top or mixed with the salad.

PINEAPPLE SALAD

Arrange 1 slice of pineapple on a lettuce leaf. Pile on center $\frac{1}{2}$ banana, cut in cubes. Pour over this thick mayonnaise dressing. Sprinkle chopped nuts on the top.

The exact proportion of different fruits used

in the making of salads is not an important point so long as the blending flavors are pleasing.

The following suggested combinations may be used in any proportion with dressing and served on lettuce leaf:

White grapes (seeded), apples, nuts, celery.

One-half pear, pineapple, pimento.

Grape fruit, bananas, nuts.

Peaches, oranges, marshmallows in orange cups.

MEAT SALADS

Chicken and fish are used most for meat salads. Mayonnaise dressing blends best with these salads.

CHICKEN SALAD

(Serve 8-10)

2 c. cold cubed chicken $\frac{1}{2}$ c. chopped celery
 $\frac{1}{2}$ c. seeded white grapes $\frac{1}{2}$ c. chopped nuts

Use mayonnaise dressing. Serve on lettuce leaf with salted wafers.

The following proportions will serve six. Use any of the dressings.

1. One-half c. shrimp, $\frac{1}{4}$ c. shredded cabbage, 1 tbsp. diced onion, 2 hard egg whites diced.

2. One-half c. salmon, $\frac{1}{4}$ c. diced cold potatoes, $\frac{1}{2}$ c. celery, 1 tbsp. lemon juice.

3. One-half c. stuffed olives, $\frac{1}{4}$ c. grated cheese, $\frac{1}{2}$ c. nuts.

4. One c. cottage cheese, 1 green pepper, cut fine, one pimento, $\frac{1}{4}$ c. nuts.

5. One-half c. peas, $\frac{1}{2}$ c. salted peanuts, $\frac{1}{2}$ c. diced cucumber in half tomatoes.

EGG SALAD

One cold hard-cooked egg cut in halves, cross-wise. Arrange on lettuce leaf with mayonnaise and garnish with ribbons of green or red peppers.

CHAPTER XX

FRUIT

The walls of the cells of vegetable or fruit which hold the juices is known as cellulose. In young vegetables or fruits it is soft, but in older growths it is generally woody and hard to digest. Make a test for cellulose in apples, oranges, or bananas. (See experiment under Potatoes.)

In a broad sense, all seed-vessels are fruits. This would include nuts, grains, squash, etc., so we commonly class as fruits those seed vessels served with sugar or as a dessert. When tomatoes were eaten with sugar and cream they were called a fruit, "love-apples."

Most fruits contain from 80 to 90 per cent water and the remaining per cent cellulose, acid, mineral and sugar, which, in an unripe state, is starch. They furnish a small amount of nutriment, convey water to the system, and act as both a tonic and an aid to digestion.

Digestibility of fruit in the stomach and intestines depends largely upon its degree of ripeness. The excess of acids present in unripe fruit causes it to be irritating to the intestines, and is frequently the cause of acute digestive disturbances.

Cooking renders fruits more digestible by softening their cellulose and it also, as we have seen in the making of jelly, converts the gum into a gelatinous form.

Pineapple juice contains a remarkably active digestive principle similar to pepsin. So powerful is its action upon proteins that it will digest one thousand times its weight in a few hours.

Bananas contain a large amount of starch, as much as the potatoes, therefore they should not be eaten in an unripe state. Cooking, of course, develops the food value and, for some persons, the flavor.

Figs and prunes have an effect upon an inactive liver, and for that reason are considered most excellent laxatives. They are also highly nutritive, as the pulp contains 60 per cent of sugar, and 6 per cent of protein.

Apples may be said to be to other fruits what potatoes are to other vegetables. They exert a great influence upon the liver and kidneys, and those containing a great amount of juice, are a laxative. "Cooking" apples are those that contain a high percentage of acid and pectin. "Eating" apples have more sugar and less acid and pectin.

Pears have less acid and cellulose than apples. They are best eaten raw, but may be preserved in syrup or dried.

Quince resemble pears but have much firmer flesh. The seeds are very rich in mucilaginous substances, which, when cooked with the fruit for jelly making, render it the easiest jelly of all to make.

Oranges, *lemons* and *limes* have an abundance of citric acid and are especially valuable for their refreshing properties and power of allaying thirst. Oranges when cooked, are used mostly for marmalades. The rind of these fruits is dried, candied, and used extensively by confectioners. The white portion underneath the skin is almost entirely cellulose and should never be eaten.

Grapes exceed all other fruits (except dates) in the amount of sugar. The minerals found in grapes are lime, potash, and magnesia.

Raisins are dried grapes and are prepared in two ways. The finest are dried on the growing plant by partially cutting the twig. Others are gathered, dried in the sun, dipped in a solution of soda, olive oil and salt, then allowed to dry again for several days.

Currants are a small seedless grape first found in Greece, but now grown extensively in our own country.

Strawberries are richer than most fruits in potash and lime salts, and especially soda salt.

Prunes have a large amount of digestible cellulose and sugar. They are considered to be a mild

laxative. For many years prunes were very cheap and so poorly cooked that they were entirely banished from the average menu, but now they are slowly coming into favor owing to the modern ways of evaporating and the numerous ways in which they may be served attractively.

BANANA PIE

Line pie tin with short pie crust and bake. Fill crust with thinly sliced bananas and cover with meringue made of

2 eggs (whites)

$\frac{1}{2}$ c. sugar

Put whites of eggs and sugar in bowl and beat until mixture will stay in shape. Pile on the pie in irregular form and bake in slow oven 15 minutes.

BAKED APPLES—CREOLE STYLE

Pare and core sound tart apples. Steam until almost tender, remove to buttered pan, fill cavities with cocoanut, stick apples full of blanched almonds, baste with syrup made with sugar, water and lemon juice. Bake tender. Serve with whipped cream or jelly.

APPLE SAUCE

(Serve 8)

Pare and cut in eighths, 6 tart apples. Cover with warm water and steam until they can be

easily pierced. Add $\frac{1}{2}$ c. sugar, $\frac{1}{2}$ tsp. lemon extract, $\frac{1}{2}$ tsp. cinnamon. When sugar has dissolved, serve.

1. Why not cook in boiling water?
2. Why add the sugar last?

BAKED APPLES

Wash each apple and remove the core. Fill hollow place, with 1 tsp. sugar blended with $\frac{1}{2}$ tsp. butter and $\frac{1}{8}$ tsp. cinnamon. Pour over 2 tbsp. warm water and bake in a slow oven until soft. Serve with cream and sugar.

PRUNE SAUCE

Buy the best evaporated prunes. Wash carefully, place in a vessel and cover with warm water and steam 2 hours. A few minutes before removing from the fire add sugar to taste.

PRUNE WHIP

(Serve 6)

Press through a sieve cooked prunes to measure 2 c. Add to the pulp, sugar to taste and $\frac{1}{2}$ c. flour. Fold into this the stiffly beaten whites of 2 eggs and bake in a very slow oven 20 minutes. The pan in which this is baked should be only one-half full when placed in the oven.

FRUIT DUMPLINGS

Make soft dough, as biscuit dough, using twice

the amount of shortening. Roll $\frac{1}{8}$ in. thick. Cut in three-inch squares, pile fruit in center, add sugar and spices to taste; gather up points and sides and press together. Turn the dough ball over and place in a buttered pan. Bake in a hot oven 20 minutes, if the fruit is cooked, or if raw, until fruit is sufficiently done. Just before removing from the oven glaze with beaten egg and sugar. Serve with a sauce made of:

$\frac{1}{2}$ c. butter	$\frac{1}{2}$ c. water
1 c. brown sugar	$\frac{1}{2}$ tsp. lemon extract
$\frac{1}{4}$ tsp. cinnamon or nutmeg	

Heat in double boiler until sugar and butter have made a syrup.

Sliced apples, peaches, apricots or berries may be used in these dumplings.

When fresh berries are used, the dough may be rolled thin, the berries spread over it, sugared and floured and all rolled as a "jelly roll" and baked. Slices $\frac{1}{2}$ in. thick are cut from the end and served.

Fresh fruit should be served as nearly as possible in its natural state. The following suggestions may be helpful:

Strawberries—washed thoroughly with the stems on, and served with the powdered sugar.

Oranges—in halves with the pulp cut free from the skin.

Grape-fruit—in halves, with each section cut

free from the skin and the tough white partitions of each section removed. These may be served with sugar or natural.

Grapes—in bunches, thoroughly washed.

Canteloupe—in halves, with seeds removed.

Watermelon—only the heart, cut in small pieces. pieces.

All fruits are better if served very cold.

CHAPTER XXI

SHERBETS AND ICE CREAMS

The food value of these dishes depends upon their composition. Ice cream made from pure cream, sugar and flavorings, has a high food value, and the sherbets and ices made from the juices of fresh fruits rank high for their ability to stimulate and refresh. The fact that ice cold drinks and foods delay digestion is much against this otherwise very delightful way of supplying the body with nutriment and liquid.

Ices and sherbets are either a composition of fruit juice, sugar and water frozen, or crushed fruit added with the juice. Beaten egg white, gelatine and cream may be added to sherbets.

Ice creams are a composition of milk, sugar and flavoring, frozen, or a thin custard frozen. The first class of cream known as *Philadelphia ice cream* is the simplest form of frozen cream. Those made from a custard are known as *Neapolitan ice creams* and to them may be added the various flavorings, fruits, nuts, etc. Inferior creams of the last class are often made by using a large amount of starch in place of the egg in the custard.

To freeze. The can, paddle and lid should be

thoroughly scalded before placing it in the wooden bucket. Fasten the freezer and everything in place, as if ready to freeze. Fill the space between the can and the bucket with ice and *rock salt*; 1 part salt to 3 parts ice—the ice pounded fine. Turn the freezer slowly while the packing is being done. When nearly to the top, remove the crank and lid and pour in the liquid. Do not have the can more than two-thirds full, as the liquid expands as it freezes. Replace the lid and crank, fill to the top with ice and salt and turn slowly a few minutes to evenly distribute the freezing through the liquid. As the liquid freezes the crank may be turned very fast.

Why we use salt. Salt causes ice to melt and the melting ice withdraws heat from the surrounding substances, and so lowers their temperature, causing them to freeze. The finer the ice the sooner it will melt.

When the liquid is frozen, remove the paddle, pack firm with a spoon, place a paper over the top of the can, then the lid with a cork in the top. *Draw* off all the water and fill the bucket with ice until the can is covered. Let stand for an hour or so. Do not add salt to the ice when packing the cream.

LEMON ICE

(2 quarts)

1 qt. water

juice 6 lemons

2 c. sugar

Dissolve the sugar in the hot water. Add lemon juice and freeze.

PINEAPPLE SHERBET

(1 gallon)

1 qt. water	1 qt. can grated pineapple
1 egg white	2 c. sugar
	2 lemons

Dissolve sugar in hot water, add fruit and lemon juice, and when partially frozen add the egg white, beaten stiff and dry. After the egg is added the freezer must be turned very fast. When adding the egg white, 1 c. cream may be added also. The name sorbet is sometimes given to a sherbet when cream has been added.

APRICOT ICE

1 pt. dried apricots (cooked and strained)	1 pt. sugar
	1 qt. water
1 tbsp. lemon juice	

Dissolve sugar in hot water. Add fruit and freeze. When frozen remove paddle and pack until ready for use.

PHILADELPHIA ICE CREAM

(1 gallon)

3 pts. sweet cream	(2 c. maple syrup may be used in place of brown sugar)
1 tbsp. vanilla	
1 c. b. sugar	

Scald cream, add sugar and when dissolved add flavoring and freeze.

FRUIT ICE CREAM

(1 gallon)

2 qts. thin cream 2 c. crushed strawberries
 2½ c. sugar

Scald cream and sugar. Add the fruit, crushed. Freeze. Any fresh fruit may be used.

NEAPOLITAN ICE CREAM

Make a thin custard as directed in Chapter XIII, and freeze. Nuts and fruits, either fresh or candied, may be added.

Caramel creams are made by using one and one-half as much sugar as the recipe calls for, heating it slowly over a fire until the sugar has melted and browned slightly. Remove and pour over this water to cover and stir until it is dissolved. Use this with the cream or custard in place of the required amount of sugar.

We use more sugar, as caramelizing destroys some of the sweetness. Great care must be taken not to burn the sugar as it will then have a bitter taste.

GELATINE IN CREAMS

Gelatine is a protein obtained from animals and vegetables. The animal gelatine is made by cooking the bones of young calves in water, straining the liquid, allowing it to congeal, and then evaporating it. Vegetable gelatine is made from a sea weed.

Soak gelatine first in cold water until soft, then add boiling water or liquid to it and put it in a cold place to congeal.

The directions on the packages of gelatine you buy are a safe guide to follow in the preparation of the dishes. In creams, gelatine gives body and food value to the dish. One oz. of gelatine will congeal 1 qt. liquid. When using it with a custard cream $\frac{1}{2}$ oz. ($\frac{1}{2}$ tbsp.) of gelatine should be used.

1. Why do we not draw off the water while the cream is freezing?

2. Why do we draw off the water and use no salt when packing cream?

CHAPTER XXII

DIETARY STANDARDS

Statements of the amounts and kinds of food needed or taken by people of various climates, ages and occupations are called "dietary standards," or "balanced rations." In studying these standards the aim is:

(a) to determine the food *requirements* under different conditions.

(b) to determine the *amount* of food *necessary* under different conditions.

(c) to classify the foods that will give us the required nutrition.

To secure a proper combination of the proteins on the one hand and the fats and carbohydrates on the other, in such proportions as to provide the necessary material for the building and repair of the body and to generate energy for its work, and at the same time not to complicate the process of excretion or elimination, is one of the problems of dietetics.

Every act of ours is a breaking down of body tissue. It makes no difference if the body is kept practically still, the very acts of breathing and

thinking break down cells and tissue. The breaking down of these cells and tissues produces a waste substance, which may be compared to the ashes left after wood or coal has been burned. This body waste should be thrown off as fast as it accumulates or we must pay for the storage with headaches, indigestion, or severe illness. Nature provides several avenues through which this may be eliminated; namely, the skin, the kidneys, the lungs, and the intestines; and it is our duty to aid these organs in their work by making a careful selection of the kinds and amounts of food we eat.

PHYSICAL AND MENTAL EFFECTS OF FOOD

A very wise person said, "The food we eat determines our efficiency," meaning that a man or woman is well and strong and capable of working and thinking according to the amount and kind of food he eats. If every mother or teacher would give one-tenth as much time to teaching her children how to select foods and how to eat, as she does to any one of the other subjects in school, the coming generations would be marvels of strength and intelligence.

Among the lower animals the meat eaters are fierce and dangerous and of little or no value to man. While the vegetable or grass eating animals are mild and gentle and of service to the

world. Investigations into the lives of degenerates and criminals prove that with but few exceptions they were inveterate meat eaters.

To make a comparison between educated people and animals or degenerates is perhaps too strong, yet it is a fact that the average American family eats too much meat. A liberal service of meat, once a day, eaten in combination with coarse vegetables could not possibly injure any one who is well, and in fact, the animal protein which meat contains cannot well be supplied by other foods; but the families who serve one and sometimes two meats at each meal are committing nothing short of a crime towards their own bodies.

Meat putrifies sooner than any other food, and for that reason should be eaten with coarse vegetables, corn bread, and the like, so as to insure its rapid movement along the alimentary canal. This putrification causes various disorders of body and mind, known as headaches, irritableness, indigestion.

APPETITE AS A STANDARD

The statement is sometimes made that if a person would follow his appetite, no mistake would be made as to selection of diet. It takes only a moment's time to satisfy a person that this statement is untrue. Some people, by following their appetites, become unduly stout or have all sorts

of digestive disturbances while others become very thin and show a lack of nourishing food. If, however, from year to year a person is strong and well from eating the things suggested by appetite, it is a safe guide until disorders arise. People have been known to learn to like foods that had been very distasteful to them; such as, tomatoes, celery, olives, spinach, etc.

OVER-EATING

Many times whole meals which otherwise would serve as "balanced rations" are wasted as a result of over-eating. When the stomach is overloaded with food the mass becomes so compact that digestion is practically impossible, and finally a large part is eliminated from the body as waste.

DIETARY STATEMENTS

Fuel value of food is estimated by a measure termed "calories," which you will study in detail in more advanced work, but for our purpose it serves just as well to use the gram and the ounce as estimates, and it is well to keep these proportions in mind:

28 grams equal 1 ounce, 16 ounces equal 1 pound.

While much valuable work is being done with the purpose in view of determining the amount of food which a person of a given age, sex, and

degree of activity should eat, not enough has been accomplished as yet to make it possible to lay down any hard and fast rules. The most commonly accepted American standard is that of Dr. C. F. Langworth, that the average adult in the United States should daily be supplied with: Protein 4 oz. Fats 5 oz. Carbohydrates 13 oz.

Making an approximate of 22 oz. of solid food per day besides from three to six pints of liquid.

From these figures, for a man who exerts much physical energy, the following menu is *suggested* and contains the above amounts of food proportions:

BREAKFAST

- 1 prepared wheat biscuit
- 1 cup medium cream
- 1 tbsp. sugar
- 2 slices of toast
- 2 one-inch cubes of butter
- $\frac{3}{4}$ cup coffee
- $\frac{1}{4}$ cup cream
- 1 egg, poached

LUNCH

- 1 cup chicken soup
- 2 water wafers
- 1 baked potato (medium)
- macaroni with cheese sauce
(1 cup)
- 1 apple fritter
- 2 tbsp. maple syrup
- $\frac{1}{2}$ pint milk

DINNER

- | | |
|----------------------------|-----------------------------------|
| 1 cup cream of tomato soup | 1 slice pineapple—lettuce |
| 2 water wafers | mayonnaise—nuts |
| 1 lamb chop broiled (lean) | 1 water wafer |
| mashed potatoes (1 cup) | rice pudding ($\frac{1}{2}$ cup) |
| 2 parker house rolls | with cream |
| 2 one-inch cubes butter | $\frac{1}{2}$ inch cube cheese |
| 1 tbsp. jelly | 4 tbsp. black coffee |

For a teacher or man or woman of indoor vocation the daily supply should be: Protein, 3 oz.; fats, 3 oz.; carbohydrates, 11 oz.

BREAKFAST

$\frac{1}{2}$ orange
 1 cup oatmeal (steamed)
 1 cup medium cream
 2 tbsp. sugar
 2 slices toast
 1 one-inch cube butter
 1 cup milk

LUNCH

$\frac{1}{2}$ cup cream corn soup
 2 wafers
 1 three-inch cube white fish (tomato sauce)
 $\frac{1}{4}$ cup creamed potatoes
 2 slices whole wheat bread
 1 one-inch cube butter
 4 stewed prunes with juice
 1 cup milk

DINNER

1 slice roast beef (4 cub. inches)	1 one-inch cube butter
1 medium sized boiled potato	1 tbsp. grape jelly
$\frac{1}{2}$ cup spinach	$\frac{1}{4}$ cup apple, celery and nut salad (mayonnaise dressing)
$\frac{1}{4}$ cup cottage cheese—cream	1 water wafer
2 slices white bread	$\frac{1}{2}$ cup thin custard water

For the average school girl of from twelve to sixteen years of age the following amounts are approximate in temperate climates: Protein, $3\frac{1}{2}$ oz.; fats, $2\frac{1}{2}$ oz.; carbohydrates, 10 oz.

BREAKFAST

$\frac{1}{2}$ cup oatmeal with 1
 banana
 $\frac{1}{2}$ cup medium cream
 1 tbsp. sugar
 1 graham muffin
 2 one-inch cubes butter
 4 tbsp. maple syrup
 1 cup milk

LUNCH

1 cup vegetable soup
 2 wafers
 1 slice lean bacon, crisp
 1 baked potato (medium)
 1 one-inch cube butter
 1 three-inch cube corn
 bread
 $\frac{1}{2}$ cup baked custard

DINNER

1 lean chop, broiled (well done)	1 tbsp. jelly
$\frac{1}{4}$ cup creamed turnips	$\frac{1}{2}$ cup lettuce and hard- boiled egg salad
$\frac{1}{4}$ cup steamed peas	(mayonnaise)
2 stocks young celery	water or milk
2 parker house rolls	1 baked apple—cream

NEEDLESS BUYING OF EXPENSIVE FOODS

With people generally, and especially those with moderate incomes, the mistake is made of buying expensive foods or those out of season when the less expensive fruits, vegetables, or meats would serve the purpose just as well. Strawberries, at 25 cents per box, tomatoes at 20 cents per pound or grapefruit at 15 cents apiece, are luxuries, yet it is often those who can least afford it that indulge in these extravagances. On the other hand a woman may be very anxious to do the best she can for her family on a limited income, but is ig-

norant of the nutritive value of the cheaper foods and how to cook them to the best advantage: Eggs at 30 cents per dozen can be replaced with cheaper cuts of meat, beans, peas, etc., which will give three times as much nourishment for the money expended.

Housekeepers need to learn that there is a higher nutritive value in some of the cheaper foods when compared in price with the costlier kinds; that the present methods of cooking in the average home must be improved, and that to make the table more attractive will be an excellent means for making the home life more enjoyable.

1. What do we mean by "balanced rations?"
2. How will carefully selected foods effect our general health?
3. Compare the inclinations of meat eating animals to vegetable or grass eating animals.
4. In what way might a heavy and excessive meat diet affect our disposition?
5. Give reasons why it might affect our health.
6. Why do we need to eat coarse vegetables, as cabbage, turnips, celery, etc.?
7. Explain why we should not allow our appetite to govern our selection of food.
8. What are the dangers of over-eating?
9. Why does a man at hard work need more fats and protein in proportion than the man of indoor life?
10. Why does a teacher or pupil need less food, and in different proportions, than the man who works in the field all day?

CHAPTER XXIII

PLANNING MEALS

It is the duty of every homekeeper to plan her meals at least a day ahead. After breakfast, make out the menu for dinner, luncheon and the breakfast for the next morning. In doing this, three points are to be considered:

First, will your meals, as planned, contain each of the food principles as given in dietary standards, known to be necessary to a well-balanced meal for body building.

Second, have you made arrangements to have in the house all of the materials necessary to the fulfilling of the menu? In many homes the meals are so poorly planned that when the preparation is started, the coffee can will be found empty, the sugar used, the baking powder or the butter or the flour vessels empty. At the last minute, the children or the husband is sent to the nearby grocery store or to some neighbor for help. Fortunately, the teaching of domestic science in schools is fast doing away with the "borrowing housewife."

Third, have you planned to use up all your

left-overs? In no other way can a good house-keeper show her skill more than in making palatable and attractive dishes from the remnants left of other meals.

This much of the preliminary done, we shall consider each of the steps in detail. From our study of balanced meals we know that we must have protein, fats, carbohydrates and besides these, *bulk*, meaning coarse vegetables, fruits, or breads, which may or may not have food value, but which will aid in carrying the other foods along the alimentary tract. For many years farmers have known that to keep their stock in the most healthful condition they must feed them, besides grains, a "roughage," straw, hay, etc. People, generally, are just beginning to realize that they too must have "roughage," obtained by eating such food stuffs as celery, cabbage, turnips, lettuce, and some fruits cooked with the skins, as cranberry sauce, unpeeled apples and the like.

From the chapter on "Foods" in this text, it is easy to determine from what sources the different food principles may be obtained. This dinner was served in the home of a very intelligent family: Roast beef, gravy, baked beans, cheese soufflé, bread, butter, water. Notice that the foods were all proteins, practically no carbohydrates, and very little fats. Any one of the three proteins, with potatoes, or rice and a coarse vegetable,

bread, and some fruit would have been more wholesome, more digestible and less expensive.

OF WHAT MEALS SHOULD BE COMPOSED

A *breakfast* should, if possible, consist of fruit, cereal and cream, eggs, or crisp bacon, or fish; bread, butter and a drink and, perhaps, a syrup. A *luncheon* should consist of a heavy soup, some of the proteins, potatoes, or rice, bread, butter, fruit arranged as a salad, and one of the light desserts of the custard variety. A *dinner* should consist of two vegetables, one of the coarse variety and one a starch, a meat, well cooked, a jelly or preserve, bread, butter, a salad of any variety except a meat, a dessert of well-made pastry, perhaps, small piece of cheese, and a drink. A clear soup served at the beginning of a dinner is a good addition.

SERVICE

There are two forms of service, *family service*, where the food for the whole meal is placed on the table at once, and *formal service*, where the foods of the different classes are served separately or in courses.

The family service is undoubtedly the easier, though not the most attractive way of serving and is most frequently used in families where there is only one pair of hands to carry on the

work and where the conservation of strength and time are the main problems. Even in this simple service the dishes should be made to look neat and attractive and the table should be well-arranged.

In the formal service, the courses for the different meals and their order of serving is as follows:

BREAKFAST

1. Fruit
2. Cereal
3. Simple egg or meat dish, bread
4. A sweet (cakes or waffle, syrup)
5. Drink

LUNCHEON

1. Heavy soup or a fruit
2. Light meat with vegetables, bread
3. Salad
4. Dessert
5. Drink

DINNER

1. Relish (tart drink or canape)
2. Cocktail (fruit or fish)
3. Clear soup
4. Fish (with potatoes, bread and relish)
5. A roast, two vegetables, bread, sweet.
6. Water ice.
7. Salad
8. Dessert
9. Cheese—water crackers
10. Black coffee—mints

REPETITION OF FOODS AND FLAVORS

Care must be taken not to repeat a food or a flavor in a meal. In the formal dinner, if the cock-

tail is a fruit, the salad should be a vegetable; if the roast is beef, and a fowl or fish course is to be served, a vegetable soup should be used; if the roast is fowl the soup may be beef, or vegetable. Often at dinners, nuts are used as many as three times; on the table, on the salad, in the dessert. This should never be, and the hostess who serves chicken soup at the beginning of her luncheon and chicken salad later on, displays very bad taste. Oysters are often repeated at a dinner, as oyster soup, or cocktail followed by oyster dressing with the turkey, or scalloped oysters; all of which go to show how little thought is given to the planning of satisfactory meals.

A STUDY OF HOUSEHOLD EXPENSES

1. Make a list of the different necessary foods used in every household, with the prices as used.
2. Make a trip to the market with a lesson on how to select the best foods; also a trip to the butcher shop to make a study of meat cuts, etc.
3. Work out the menus for the meals for a day for a family of four that will cost not over 50 cents.
4. Take up the expense of the average household—lights, heat, water, repairs, and study ways and means of economy in each.
5. Study the cost of clothing for men, women, and children, and the ways and means of economy along this line.
6. Work out the division of a man's salary which is \$520 per year, for a family of four, rent to pay or build-

ing and loan payments to meet. Give one week's kitchen expense in full with each day's menu worked out.

In working out this division of salary, make an allowance for the yearly expense under these items,—rent, heat, lights, clothes, food, new furniture, replacing broken dishes and kitchen utensils, doctor, dentist or medicine, gifts, amusement, carfare, church, magazines, papers, school books, stationery and accessories. Under accessories will be included tooth brushes and powder, pins, toilet articles, etc. When itemizing the clothing for each member of the family, make a complete list needed for summer and winter with ways of economizing for each.

DOMESTIC ART

CHAPTER XXIV

TEXTILES

Cloth from which garments are made is of one of two fibers—animal or vegetable. Animal fibers are silk, wool, mohair. Vegetable fibers are cotton and flax.

Animal fibers are characterized by their composition of protein and sulphur, so plainly detected by the odor when portions are burned. This is one of the surest tests of the difference between an animal and a vegetable fabric—the odor evolved on burning. Animal fibers are made up of tubes which are elastic in appearance and have the power to shrink or elongate under certain conditions.

Wool is the covering of the skin of sheep—a mass of short, kinky hair. Under a magnifying glass, each hair is seen to be made up of scales, piled one upon the other, somewhat as fish scales. These scales may over-lap each other nearly their full length or may be pulled out until only the tip edges are touching.

Mohair is the long silky hair of angora goats. In structure it resembles wool, with the exception that its scales lie very close together with very little lap. This gives it its luster and stiffness.

Silk is the continuous thread spun from the cocoon of the silk worm. In structure, when magnified, the threads show a smooth surface, like firm gelatine. This gives to it its softness and its luster.

Vegetable fibers are made up of tubes composed of small cells which form fibers. These cells are easily broken apart, giving the fibers this characteristic: when a vegetable fiber thread is broken it *snaps*, while the animal fiber threads gradually pull apart.

Cotton is the lint of a plant which grows in warm countries. This lint is separated from the seed, carded, spun into thread and woven into various cloths. (Read cotton culture in an agriculture text.)

Linen is made from the fiber of the flax plant. It is grown to some extent in this country, but more extensively in Ireland, Holland, and other European countries. When it has attained its growth, it is pulled up by the roots, the seeds removed and the straws tied in bundles and thrown in water to soak about one week. This is called *retting*. Retting causes the hard cellulose on the outside of the plant to decompose and slip

off. When the retting is during exactly the right length of time the linen has a luster. If the straw is left in the water too long we have a dull looking cloth.

Weaving. All fibers are first spun into threads and these threads woven into cloth. Some are colored before they are woven, and in others the cloth is colored or stamped.

Cotton cloths. Cotton is much used for underclothes, dresses, waists and skirts and is made in various weaves and has numerous names; but the standard cloths are:

1. For underclothes—muslin, longcloth, nainsook and cambric.

2. For wash dresses and waists—lawn, calico, crepe, piqué, and gingham.

3. For separate skirts—Indian head, crash, heavy piqué, and poplin.

These goods will shrink, and it is wise to have them shrunk by soaking them in boiling water for 30 minutes, drying and ironing smooth with a very hot iron, before they are made into garments.

CHAPTER XX

PLAIN SEWING

It is necessary to know something of the different stitches and seams with their appropriate use, before attempting to apply them in garment making. Seams and stitches may be ripped and made over, but in some cases the appearance of the garment is spoiled, and it is much better to practice the various seams and stitches on odd pieces of cloth, until their use and making is understood.

The thimble, a hood of silver, gold, or aluminum is to be worn on the middle finger of the right hand for use in pushing the needle through the goods. Most girls must be taught to use a thimble, but its use must be insisted upon on account of the danger that the needle will break the skin of the fingers and hand.

The needle, a smooth slender steel piece used to carry the thread, is made in various sizes and lengths. We may buy them in packages all of one size or in assorted sizes, with numbers ranging from 5's to 10's, etc. The small numbers are for the coarse thread, the higher numbers for the fine thread. A No. 8 needle will carry thread from 60 to 80, No. 5 needle, thread from 30 to 40.

The thread, hard twists of cotton, linen or silk fiber, is manufactured in practically every shade and size. For convenience it is wound on spools in lengths from 50 to 200 yards. The sizes of the thread are designated by numbers and letters. When selecting cotton thread for a certain material, buy the number that is the same size as the warp of the cloth. In hand sewing, measure the thread from the hand to the shoulder to determine the length. Beginners generally use too long threads. It is an economy of time and energy to thread a needle often rather than to use the extra energy in pulling a long thread through and untying and unfastening the knots that long threads make.

To thread a needle. Break or cut the thread from the spool, twist the end between the thumb and finger until it is pointed, then force it through the eye of the needle. Do not bite the thread from the spool or wet the end of the thread in the mouth. These practices are unsanitary and wet thread soils the work.

The stitches. Bastings,—hasty stitches made in garments to hold goods in place until permanent stitches are made. There are three basting stitches used, *even basting*—the stitches and spaces are of even length, about $\frac{1}{8}$ inch long, and are used in shoulder, under arm and skirt seams; *uneven basting*—the stitches are of uneven length usually two

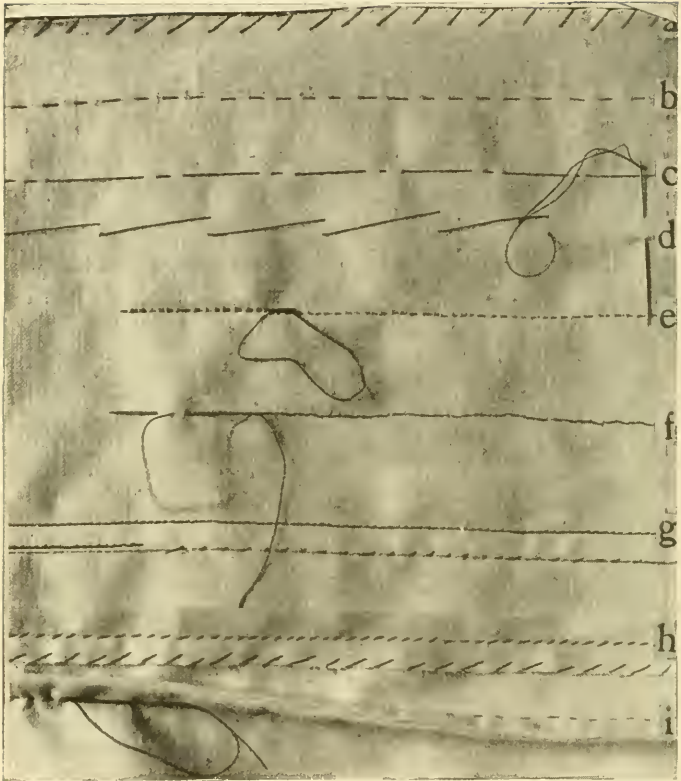


PLATE IV

- (a) overcasting.
- (b) even basting.
- (c) uneven basting.
- (d) diagonal basting.
- (e) running stitch.
- (f) stitching or back stitch.
- (g) fell seam, machine and whipped edge. When machine stitched it is sometimes called a tailored seam.
- (h) overhand seam showing one edge overcast.
- (i) French seam.

short and one long stitch is taken. This basting is used in hems, etc.; *diagonal basting*—the stitches are taken in the goods in a vertical line, from $\frac{1}{2}$ to 2 inches apart. This basting is used mostly in tailoring when paddings and stiffening are fastened together.

Permanent stitches are made in place of machine stitches; *running stitch*, the stitches are of even length and very small, often only two threads of the goods between stitches; *back stitch*, each new stitch is begun in the goods where the last stitch finished, an imitation of machine work; *whipping stitch*, the threads of the goods are taken up by the needle, then the edge of the goods. Used in hems.

Seams constitute the manner of fastening edges of materials together:

Plain seams are made by sewing the edges of two materials from $\frac{1}{4}$ to 1 inch from the edges.

Open seams have the edges of the plain seams pressed open and over-cast.

French seams have the edges of the goods first made into a plain seam on the right side of the goods, then this seam is trimmed very near to the raw edges turned in to the wrong side and stitched.

Fell seams have a plain seam made on the right side, one edge of the cloth in the seam is trimmed very close to the stitching and the other folded over the short edge, turned down and stitched. This is used in underclothes, shirts, tailored waists

a. Overcast edges of button-hole.

b. Worked button-hole. One end fanned, the other barred.

c. d. Hook and eye fastened in place with button-hole or blanket stitch.

e. Blind - eye made with blanket stitch.

f. The blind-eye in process of making.

g. To sew on a two-hole button.

h. To sew on a four-hole button.

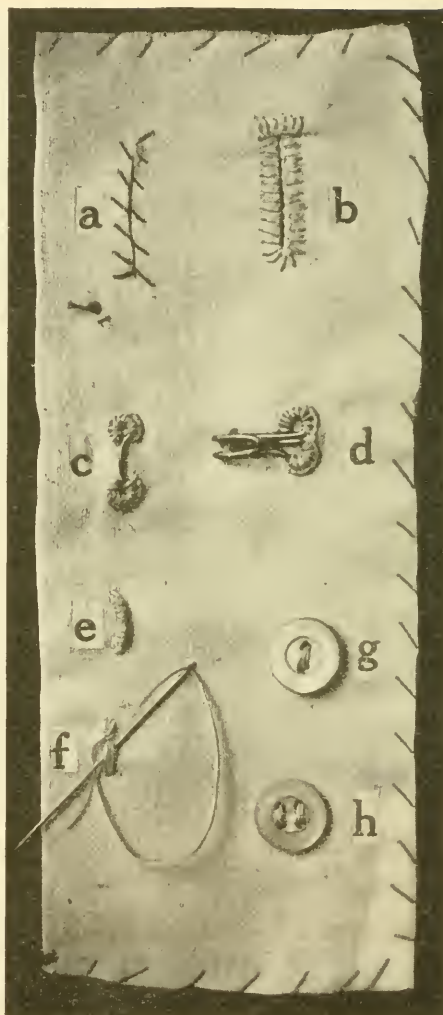


PLATE V

and suits. The wide edge in this seam should be folded toward the back.

Overhanded seams are made with the edges of the two pieces of cloth folded back the width of a seam, then the creased edges placed together and whipped.

To make button-hole stitch. Pull the thread through the goods once, place the needle through the goods again, bring the threads from the eye of the needle around its point and then pull the needle through. This will make a knot or "purl" on the edge of the cloth.

Button-holes should be cut, their length with the length of the goods, and may be made with rounding ends, where there is no strain on the ends, or with one end or both ends barred, where there is a great strain. In goods that frays very easily the edges should be overcast before the button-hole is worked.

Hooks and eyes should be lightly fastened in place by a basting thread, and then made permanent with the button-hole stitch.

Plackets are finishings for openings of skirts at the belts, or for shirt sleeves at the cuff. The *continuous placket*, is made by sewing the strip of cloth, cut lengthwise of the goods, straight around the edge of the placket, turning the top edge over the raw seam and whipping it down. This placket

is best for the skirts of wash dresses and should be from 9 to 11 inches deep.

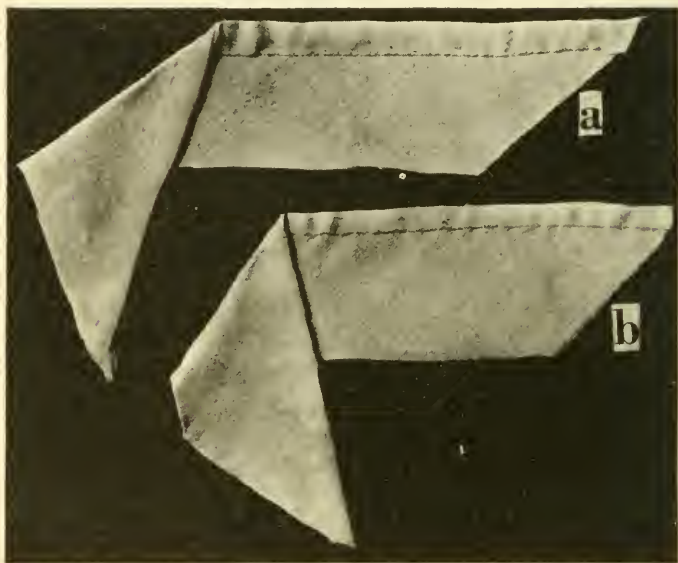


PLATE VI

(a) The faced edge.

(b) The bound edge.

Bound edge. Extended finishing of an edge.
Faced edge. The entire finishing is turned back on the goods.

The different steps to be followed in making the four foundation garments are given in order of their application. When the making of these four garments, with their various problems, is mastered, all plain sewing will be simply a matter of application and judgment.

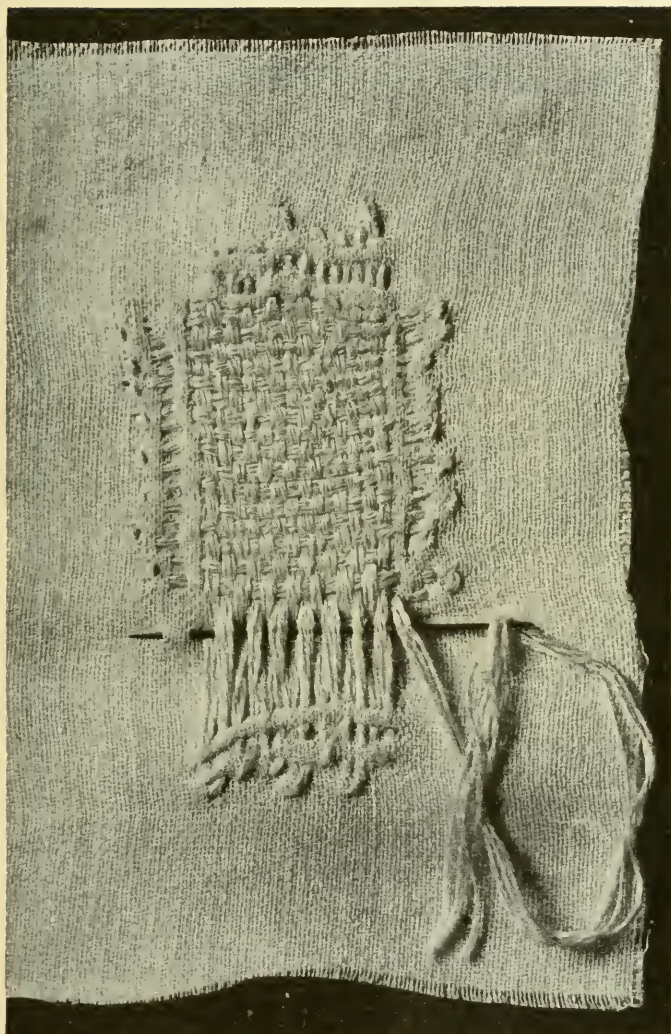


PLATE VII

Darning. Suitable for mending table linen, lace, stockings or woollens.

USE OF PATTERNS

There are many companies who make good, reliable patterns. These patterns state length of skirt, bust and waist measure, and the number of yards of material, of stated widths, required. When selecting a waist pattern, buy according to bust measures; when selecting a skirt pattern, buy according to waist measure. To obtain waist measure, place tape around smallest part of waist. For bust measurement, take loose measure around the fullest part of bust well down in front and slightly raised at back.

Read carefully all printed explanation found with pattern. Follow these instructions closely, and thus avoid mistakes in cutting and putting the pieces together. Pin the entire pattern upon the cloth before cutting. This will eliminate waste of cloth.

PLAN OF SKIRT MAKING

1. Baste seams together and fit to figure.
2. Make permanent seams (French or Fell).
3. Press all seams.
4. Make placket (continuous placket preferred).
5. Finish top with band $\frac{3}{4}$ inch wide (on straight of goods) or face at waist line.
6. Hem or face at desired length. (To obtain length: measure from floor, with a ruler or gage, the distance the skirt is desired from the floor, and mark with chalk or pins.)

TO MAKE WAIST

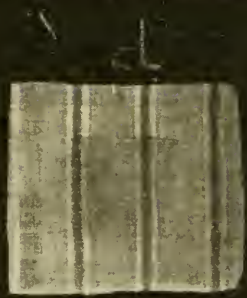
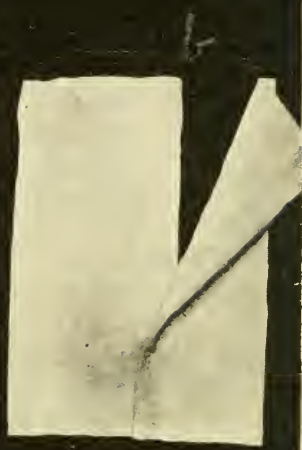
1. Baste shoulder and under-arm seams.
2. Fit to figure.
3. Make permanent seams. (French seam in thin material, fell seam in heavy material.)
4. Hem or put box plait on right side of waist, face left side.
5. Finish at neck with band or collar.
6. Make seams in sleeve to correspond with seams in waist.
7. Put sleeve in by matching notches in sleeve and eye of arm (bind or fell).
8. Obtain desired length of sleeve and finish with cuff or facing.
9. Finish bottom with band or narrow hem.

TO MAKE CORSET COVER

1. Baste seams and fit.
2. Make narrow French seams.
3. Hem right side, face left side of front.
4. Face arms, eye and top, with narrow bias strips turned to the wrong side and stitched.
5. Finish at waist with $\frac{3}{4}$ -inch band or narrow hem.
6. Work small button-holes, cut lengthwise of material. Sew on buttons.
7. Trim with lace or embroidery.

TO MAKE DRAWERS

1. Stitch front and back seams.
2. Match front and back seams at crotch and stitch—thus forming the legs. All seams are narrow French seams.



3. Allow nine inches opening at back or side for placket.
4. Finish with continuous placket.
5. Finish at waist with straight or shaped band.
6. Work button-hole and sew on buttons or sew on tape.
7. Hem legs with narrow hem or facing, then finish with trimming.

TO REPAIR GARMENTS OR LINENS

Three methods are used to repair worn or torn garments and linens; namely, patching, mending and darning.

Patching is used mostly on cotton goods. The rent is cut into the smallest possible square, the corners clipped, and the edges folded to the wrong side. Place under this a piece of the goods, the length of the patch with the length of the goods in the garment, and the stripes or figures in exact line with those that were cut out. Whip down the folded edges of the square, turn to the wrong side, cut the patch one inch from the whipped edge, fold under the edges and fasten to the goods with the running or whipping stitch.

PLATE VIII

a. Continuous placket showing straight strip of goods sewed to the cut edges. b. Continuous placket with the straight strip folded in place and ready for the band or finishing. c. Snagged or torn place in cotton or linen garments. d. Patch for linen or cotton garments. f. Snagged or torn place in woollen garment. g. Mended place in woollen garment. The rough edges are pressed flat, then with a raveling from the goods the edges are darned flat. All raw edges are trimmed with the scissors after the darning.

Mending is used mostly on woolens, mohair and table linens. When mending, if the rent is very large, a piece of the goods is fastened under the tear, the edges pressed flat upon it, and with ravelings from the goods, the edges are woven back in place. In very fine goods a long hair, is often used in place of the thread in the weaving.

Darning is used mostly on table linen, knitted goods, stockings and laces. Darning is weaving back in place threads that have been removed or worn away. The illustration shows how the threads are first placed in the length of the goods and then another thread woven back and forth through them.

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